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AN EVALUATION OF THE EXISTING TREES
CASTILLEJA SCHOOL
1310 BRYANT STREET
PALO ALTO, CALIFORNIA

PREPARED AT THE REQUEST OF
MS. MANDY BROWN
FINANCE AND OPERATIONS ANALYST
CASTILLEJA SCHOOL
1310 BRYANT STREET
PALO ALTO, CALIFORNIA

PREPARED BY
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SITE OBSERVATIONS:
APRIL 13, 21, 2016
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An Inventory of the Existing Trees
Castilleja School
1310 Bryant Street
Palo Alto, California

Assignment

I was asked by Ms. Mandy Brown, Castilleja School, to prepare an Arborist Report of the existing trees on the entire campus of Castilleja School, 1310 Bryant Street, Palo Alto, California.

Observations

I inspected the trees on April 13, 21, 2016. A total of 168 trees are included in this report.

Among the 168 trees, there are 122 trees on the Castilleja School Campus. Additionally there are 42 street trees, and 4 trees located on the neighboring property, which is located at the corner of Emerson Street and Embarcadero Road. All of the 168 tree are expected to be impacted by proposed construction.

Methods

The trunks of the smaller trees were measured using a standard measuring tape at 4 ½ feet above soil grade (referred to as DBH or Diameter at Breast Height), according to the International Society of Arboriculture (ISA) standards. The trunks of the larger trees were measured using a Diameter Tape, which is more accurate. The canopy height and spread were estimated using visual references only. Trunk measurements were rounded up to the nearest inch. The trunks of the trees on neighboring properties were estimated visually from the property boundary.

The condition of each tree was observed by visual assessment only from a standing position without climbing or using aerial equipment. No specialized equipment was used. Consequently, it is possible that individual tree(s) may have internal defects, which are not detectable by visual inspection.

Numbering of Trees
A round aluminum label, having a stamped number, was affixed to each tree for field reference. The assigned numbers correspond to this report to avoid potential identification errors. These tree tags were affixed at about 6-7 feet above grade in most cases. No labels were affixed to the two neighboring trees. Also, no tags were affixed to the palm Trees # 145-153, located in the inner courtyard. Trunk injuries to palms, including injuries caused by nails, often introduce trunk disease, which do not heal.

Tree Map
A Site Plan was provided for this inventory. I have marked the locations of all of the 168 trees on this site plan, which I call the Tree Map. The locations of the trees were estimated using visual references only. This Tree Map is included in the attachments.

List of Trees
The 168 trees are listed by number on the attached List of Trees, which follows this text. These Data Sheets provide the basic information about each tree, including the species, the trunk diameter(s), height, spread, health, and an estimate of structural integrity. The health and structural integrity is rated on a scale of 1-5: (1) Excellent, (2) Good, (3) Fair, (4) Poor, (5) Extremely Poor.

Because the health and structural integrity ratings are sometimes difficult to interpret, I have combined them into an overall condition rating in descriptive terms. This column on the List of Trees is an attempt to describe the overall condition of each tree in one or two descriptive words.

Comments About Specific Trees
The Aristocrat pear (*Pyrus calleryana 'Aristocrat'*) Trees # 7, 8, and 9 are all infected with Fireblight (*Erwinia amylovora*) disease on several of their branches. The treatment is to prune out the dead stems by making cuts about 6 inches past the dead tissue. However, this disease enters through the flowers and is more prevalent during intermittent wet showers followed by warm temperatures. Pear trees and all trees in the rose family are susceptible to this disease in any given year. I suggest this be considered when selecting new trees or replacement trees for the property.

With one exception, the American Sweet Gum (*Liquidambar styraciflua*) street Trees # 17-25 along Bryant Street are all in poor to very poor condition. The lone exception is Tree # 23, which is only in Fair condition. These are suffering from severe drought stress, because this species requires generous quantities of water to perform well. Should any of these die and require replacement, I recommend that the replacement be of a species that would require low or very low water after establishment.

The lemon Tree # 46 and the blackwood acacia Tree # 61 both have a heart rot disease called Artist's Conk (*Ganoderma applanatum*). This disease slowly destroys the interior wood until the tree falls down, in most cases. There is no treatment for this disease. However, Tree # 46 is small and would not likely case significant damage should it fall.

The fruiting body (the mushroom cap) on the blackwood acacia (*Acacia melanoxylon*) Tree # 61 appears to indicate that this is a relatively immature infection on this tree. It appears that this tree has a few years (10-15 years estimated) before it would require removal. I suggest that this tree be inspected in 5 years to monitor the disease development.

The disease seen in the photo to the left on the Lemon Tree # 46 is more advanced.

The white spot in the photo to the right is the presumed immature formation of this disease on Tree # 61. It appears is will take several years before this disease would advance sufficiently to cause this tree to fall. For a few years, I suggest that it be monitored.

It is very difficult, but not impossible, for this disease to be transmitted to other nearby trees.

All palm trees are susceptible to disease when their bark is pierced. For this reason, no tree tags were affixed to the young Queen palm Trees # 145-153 (*Syagrus romanzoffiana*). I recommend that students be informed of the disease risk to these trees should they pin banners or other items to the trunks. It would be acceptable to tie a cord around the trunks of these trees, provided the cord would not cut into the bark.

Tree # 144 is a Shiny xylosma (*Xylosma congestum*). This species is generally grown as a shrub. After many years, it sometimes grows to become a large shrub. This specimen, Tree # 144, is definitely a tree. It is quite healthy, and it is the largest specimen of this species that I have ever seen, by far.

There are three mature Coast live oak trees (*Quercus agrifolia*) in the courtyard between the buildings. All three of these tree are located in completely enclosed areas, which limits their root growth to a very limited area. Tree # 138 is located is in excellent condition. It is supplied with irrigation inside is planter box. Tree # 140 and 155 appear to get no irrigation. Tree # 140 is obviously declining, but Tree # 155 is not thriving either. I suggest that a bubler type irrigation be supplied to the planter beds in which they exist. Because of the potential risk of Oak root fungus (*Armellaria mellea*) infection, it would be essential that there be a drying period between irrigations. However, moisture must penetrate to a depth of approximately 18-24 inches with each irrigation. Should irrigation be provided, I suggest that they be irrigated about every 4-6 weeks.

The Japanese maple Tree # 139 (*Acer palmatum*) had been pruned recently. The pruner had removed much of interior branches, exposing the bark on many stems to direct sunlight. It is likely that this tree will stuffer Sunscald bark damage on a hot day. A good example of Sunscald is on Tree # 134. In the future, I recommend that the Japanese maple trees be pruned by a professional who specializes in small trees.

The Coast Live Oak Tree # 99 has an infection of the bacterial disease called Wetwood. This disease manifests itself in the form of weeping spots on the trunk. This is not typically a serious disease, except in rare cases. It can be treated by excising the diseased bark and washing out the wound with a solution of 10% liquid chlorine and water.

Tree # 112 is a large Coast redwood (*Sequoia sempervirens*). The root collar is severely decayed. I estimate that approximately ½ of the buttress root structure has been reduced to cubical brown root. I consider this tree Hazardous and recommend its removal, regardless of construction. Photos of the decay is included in the attachments.

Risks to Trees by Proposed Construction

The project team states that the project is planned to be done in stages over several years. The first phase proposes to remove the grassy playing field (Spieker Field) and to construct an underground parking garage. Additional phases would involve major portions of other areas of the campus. Based on a review of the site plans, I have made a preliminary list of all of the trees expected to be removed for the entire project, all of the trees expected to be preserved, and all of the tree I consider potential candidates for transplant for the entire campus. I have indicated the expected disposition of each tree in the last column of the List of Trees, included in the attachments.

The trees expected to be removed are as follows: Trees # 7, 8, 28, 32, 33,34, 36, 38, 39, 45, 46, 47, 54, 57, 58, 59, 60, 61, 62, 63, 64, 72, 73, 74, 75, 78, 79, 80, 82, 83, 84, 89, 90, 91, 92, 93, 94, 95, 112, 191, 115, 116, 117, 118, 119, 120, 121, 123, 130, 139, 140, 141, 142, 143, 144, 154, and 158.

Among these are 5 trees, which I recommend to removed, because of extremely poor or hazardous condition. These five are Trees # 34, 36, 46, 130 and 112.

Preliminary Transplant Candidates

I recommend the following trees to be considered as candidates for transplant. These would otherwise be removed as a result of conflicts with proposed construction. Those trees on this list are recommended based of species, size, and current condition.

However, logistics of boxing, storing, and moving some of these may preclude some of them from transplant. I recommend that each tree on this list be reviewed by a qualified tree mover in conjunction with the Castilleja project team, before the list of transplant trees would be finalized. I consider this list preliminary: Trees 6, 13, 27, 29, 30, 31,, 50, 76, 77, 81, 75, 100, 114, 122, 124, 145, 146, 147, 148, 149, 150, 151, 152, 153, and 156.

Preservation of Trees
The individual trees expected to be preserved during construction and thereafter are indicated on the List of Trees, disposition column. It will be essential for the contractors to be given specific procedures for tree protection. I have prepared a Tree Protection Plan in accordance with the City of Palo Alto Tree Technical Manual. The Tree Protection Plan is included on the following pages.

Tree Protection Plan

The City of Palo defines a “Protected tree” under the Tree Preservation Ordinance, Chapter 8.10.020, Definitions (j) as: (1) Any tree of the species Quercus agrifolia (Coast live oak) or Quercus lobata (Valley oak) which is eleven and one-half inches in diameter (thirty-six inches in circumference) or more when measured four and one-half feet (fifty-four inches) above natural grade; and (2) Any Redwood tree (species Sequoia sempervirens) that is eighteen inches in diameter (fifty-seven inches in circumference) or more when measured four and one-half feet (fifty-four inches) above natural grade. (3) A heritage tree designated by the city council in accordance with the provisions of this chapter. (4) All trees growing within the street right-of-way (publicly owned), outside of private property. (5) All trees, when associated with a development project, that are specifically designated by the City to be saved and protected on public or private property which is subject to a discretionary development review; such as a variance, home improvement exception, architectural review, site and design, subdivision, etc..

Protection Plan Requirements

1. Tree Protection Zones

All construction operations must comply with the strict adherence to protect the area that is critical to each tree’s survival, which is titled the Tree Protection Zone (TPZ) for each tree that is planned to be retained (TTM, 1.36 and 2.15 E). In this area, construction activity of any kind is prohibited, unless approved and supervised by the project arborist. In cases where specific thresholds must be met, the proposed work must also be approved by the City Arborist. Particular attention must be given to assure that **no** soil disturbance is allowed in the TPZ. The Tree Protection Zones (TPZ) for the retained trees in linear feet (diameter) are included in the attachments to this report.

The TPZ for each tree is provided in the next to last column of the List of Trees, which is included in the attachments.

2. Tree Protection Fencing

To assure that the TPZ is preserved, construction period fencing (TTM, 1.21 and 2.15 D) must be provided to protect the TPZ area. The construction period fencing typically must be located to minimally encompass the entire TPZ area at the distances stated in item # 1 above or greater. Any exceptions must be approved by the project arborist. Fencing must be chain-link, a minimum height of 6 feet, mounted on 2 inch diameter galvanized steel posts driven 24 inches (minimum) into the ground. Maximum spacing of posts is 10 feet. The fence must be in place prior to the arrival of any other materials or equipment and must remain in place until all construction is completed and passed final inspection. The protective fencing must not be temporarily moved during construction. Fencing must be located exactly as shown on the attached map.

Any other exception or requests to relocate the protective fencing, even temporarily, must be approved by the Project Arborist. Depending on the nature of the request, the relocation may also require approval of the City Arborist.

For each phase of the project, a Tree Fencing Plan must be prepared with oversight by the Project Arborist and submitted to the City Arborist for review prior to the start of construction of each construction phase. Upon approval by the City Arborist, the Tree Protective Fencing Plan must be included in the job site plan set.

3. Fencing Warning Signs

Plastic coated warning signs (TTM, 2.15 D) must be posted prominently on each fence. The signs must be a minimum of 8.5 X 11 inches and clearly state: Warning – Tree Protective Zone- This fence shall not be removed and their removal is subject to a penalty according to PAMC Section 8.10.110.9.

4. Tree Pruning

In the event that any tree may require pruning (TTM, 2.15 F) to provide access for construction vehicles, for structural clearance, or for any other purpose, the following requirements must be satisfied:

a. The proposed pruning must be approved by the Project Arborist prior to any pruning. Pruning may require additional mitigation procedures, which would be mandatory in accordance with the project arborist instructions.
b. The removal of 25% or greater of the canopy (i.e., the functioning leaf and vascular system) must be approved by the City Arborist.
c. Any pruning must be done only by an ISA certified arborist or an ISA certified tree worker under the supervision of the project arborist.

5. Tree Removal

In the event that a tree must be removed (TTM, 2.15, F 3 and 3.05A), this work must not be done by construction personnel but must be done by an ISA certified arborist or an ISA certified tree worker by the approval of both the Project Arborist **and** by the City Arborist.

A tree removal permit is required (TTM, 3.05 B). Should a tree be removed, the stump must be ground in accordance with TTM, 2.15 F 3.

Note that "The City does not require advance permission for removal of Protected or Designated Trees in emergencies" (TTM, 4.00 Hazardous Trees), but procedures must be followed after removal (TTM, 4.10 A and B).

6. Reporting of Damage to Trees

Damage is defined as any injury (TTM 1.17) to a protected tree. Some examples include the bruising, scarring, tearing of the bark or the trunk; the breaking, tearing, bruising of the branches or of roots; excessive pruning; herbicide poisoning; or any
action in which permanent decline or death could be predicted by the project arborist. Any damage must be reported to the project arborist and to the job superintendent within 6 hours of the damaging event (TTM 2.25 A). Damage that would result in the foreseeable decline or death must be reported to the City Arborist.

7. Demolition

The demolition of any building, hardscape, or utility inside the Tree Protection Zone (TPZ) must be done with the supervision of and in the presence of the project arborist. The scheduling of demolition inside the TPZ must be done well in advance so that the project arborist would be able to be present.

8. Demolition of Paving or Sidewalk

Demolition of these features inside the TPZ requires that the loader or backhoe tractor be located on and remain on the undisturbed pavement at all times. The pavement or concrete must be broken into manageable pieces and be loaded by hand (TTM, 2.4 A). The project arborist must be scheduled to be on site at least at the initiation of this demolition.

9. Irrigation

Temporary irrigation must be provided (TTM, 2.20 E, 1) all trees that may be preserved. The provision of temporary irrigation to additional trees may be required depending on the species and the final design. Trees must receive 10 gallons (20 gallons for redwoods and birch) of water per each inch of trunk diameter monthly during the dry months or more frequently as specified by the project arborist. The soil must be irrigated to moisten the soil to a depth of 24-30 inches. Soil must not reach the saturation point. A dry month is defined as any month that receives 1inch or less of rainfall.

10. Dust Control

Trees that accumulate a sufficient quantity of dust on their leaves, limbs, and trunk as judged by the project arborist must be spray washed at the direction of the project arborist (TTM, 2.20 E 2).

11. Soil Compaction

In the event that soil compaction should occur inside the TPZ of any tree, a mitigation plan will be prepared by the Project Arborist in accordance with the TTM, 2.20 E 3, which must be approved by the City Arborist.

12. Root Protection
Roots 2 inches in diameter or larger must not be severed. To assure this, trenching or excavation inside the TPZ of any tree must be done by one of the following methods:

a. an air spade
b. a water excavation spade
c. boring technology

The use of a backhoe, an excavator, or conventional trencher is prohibited, unless supervised by the Project Arborist and approved by the City Arborist (TTM, 2.20 C).

Trenching or boring (tunneling) must meet the distance or depth requirements noted on Table 2-1 of the TTM, 2.20 D.

13. Root Buffer
At locations where work must be done inside the TPZ, a root buffer may be required by the City Arborist (TTM 1.27; 2.15 E 2; 2.20 C 4). A root buffer consists of a base of 6 inches of wood chips, covered by ¾ inch clean quarry gravel, and capped by ¾ inch plywood (full sheets) tied together. The installation of a root buffer must be supervised by the project arborist.

14. Root Injury
In the event that a 2 inch in diameter or larger root becomes inadvertently severed or torn, is must not dry out or it may die back to the trunk. To prevent desiccation, the end of the root must be cut cleanly back to undisturbed wood and the exposed wound must be sealed immediately either with a plastic bag, which must be secured, or sealed with latex paint. The Project Arborist must be notified within 6 hours (TTM, 2.25 A 1).

15. Branch or Bark Injury
In the event of a bark wound, a broken or torn branch, or heat scorched leaves from equipment exhaust, the repairs must be done by a certified arborist under the supervision of the project arborist. Again the Project Arborist must be notified within 6 hours (TTM, 2.25 A 2,3).

16. Grading
The use of grading equipment or grade changes inside the TPZ are prohibited. Further, grade changes outside the TPZ shall not significantly alter the existing drainage toward a tree (TTM, 2.20 B). Exceptions must be approved by the City Arborist and work must be supervised by the Project Arborist.

17. Transplanting
Should any trees be slated for transplanting, those trees must be prepared for transplanting, dug, boxed, transported, and replanted by a qualified tree mover approved by the City Arborist. The entire transplant operation must be overseen by the Project Arborist. Aftercare standards and procedures must be prepared by the project arborist at the time of transplant.

18. Project Arborist
A Project Arborist shall be retained by the owner or appropriate parties for the purpose of providing consultation and on site supervision to assure that the existing trees survive at least in their present condition (TTM, 1.19).

19. Monthly Inspections
The Project Arborist shall provide monthly inspections followed by a monthly report in accordance with the requirements of the Tree Technical Manual, 1.18 and 2.3, Table 2-2 D.

20. Work Within the TPZ
Any work within the TPZ requires the onsite supervision of the Project Arborist (TTM, 2.3, Table 2-2 E).

21. Replacement Trees
The removal, replacement, and planting of trees shall conform to the standards and specifications of the Tree Technical Manual, Section 3.00.

The tree replacement formula in terms of size, species, quantity and placement shall be determined by the city Director (TTM, 3.20) in Palo Alto or the appropriate city official for the City of Mountain View.

The replacement trees that would be planted in parking lot islands must be planted in an **engineered structural soil** mix, which would be prepared in advance under the supervision of the project arborist. The engineered structural soil would fill an area 15 feet x 15 feet x 3 foot depth. The replacement tree would be planted in the center of this engineered soil area.

22. Tree Protection Plans
The Arborist's Report and Tree Protection Plan must be printed on the construction plan drawings, required to be part of the approved plans, and required to be on the construction site. I recommend that this plan be designated as sheet T-1.

Respectfully submitted,

Michael L. Bench, Consulting Arborist
International Society of Arboriculture Certification # WE 1897A
American Society of Consulting Arborists Member

Attachments: List of Trees (5 Pages)
Tree Map
Photos of Tree # 112
Assumptions and Limiting Conditions

	Field Data	Trunk DBH In Inches	Canopy Height In Feet	Canopy Diameter In Feet	Health 1 - 5 = Good to Poor	Structure Integrity 1 - 5 = Good to Poor		DBH = Diameter at Breast Height = 54 inches Above Grade (E) = Estimated CD w/ IB = Co-Dominant Leaders with Imbedded Bark, a Structural Weakness	TPZ = Tree Protection Zone for Trees Planned to Preserve	Disposition Of Trees Per Plans
Tree #	**Tree Name**	**DBH**	**Canopy Height**	**Canopy Spread**	**Health/ Structure Integrity**	**Structure Integrity**	**Overall Condition**	**Notes**	**TPZ Diameter in Feet**	**Preserve / Remove/ Transplant**
1	Coast Redwood (Sequoia sempervirens)	73	120	50	1	1	Excellent		122	Preserve
2	Arbutus Marina (Arbutus marina)	3	10	10	1	1	Excellent		6	Preserve
3	Arbutus Marina	5	10	15	1	1	Excellent		8	Preserve
4	Dogwood (Cornus species)	1	7	5	1	1	Excellent		3	Preserve
5	Arbutus Marina	4	10	15	1	1	Excellent		7	Preserve
6	Coast Live Oak (Quercus agrifolia)	17	30	30	1	2	Good		17	Transplant
7	Aristocrat Pear (Pyrus calleryana 'Aristocrat'	10	35	30	2	3	Fair-Good	Fireblight - Prune Infected Stems	12	Remove
8	Aristocrat Pear	9	35	25	2	3	Fair-Good	Fireblight - Prune Infected Stems	16	Remove
9	Aristocrat Pear	8	35	25	2	3	Fair-Good	Fireblight - Prune Infected Stems	14	Preserve
10	Coast Live Oak	11	30	35	1	1	Excellent		18	Preserve
11	English Hawthorne (Crataegus laevigata)	6	15	15	1	1	Excellent		10	Preserve
12	Southern Magnolia (Magnolia grandiflora)	12	20	30	3	1	Fair	Sparse Canopy	20	Preserve
13	Coast Live Oak	16	25	35	1	1	Excellent	Wetwood Infection	27	Transplant
14	Coast Live Oak	7	15	20	1	1	Excellent		12	Preserve
15	Flowering Cherry (Prunus serrulata)	8 @24"	10	12	1	1	Excellent		26	Preserve
16	Coast Live Oak	17	25	30	1	4	Fair-Good	CD w/ IB - Needs Cable	28	Preserve
17	American Sweet Gum (Liquidambar	25	80	30	4	3	Poor	Sparse Canopy; Die-Back	42	Preserve
18	American Sweet Gum	21	70	25	5	4	Very Poor	Sparse Canopy; Die-Back	36	Preserve
19	American Sweet Gum	13	70	20	5	4	Very Poor	Sparse Canopy; Die-Back	22	Preserve
20	American Sweet Gum	16	60	35	3	2	Fair-Poor	Sparse Canopy	27	Preserve
21	American Sweet Gum	18	55	30	3	4	Fair-Poor	CD w/ IB; Die-Back	30	Preserve
22	American Sweet Gum	15	45	25	5	4	Very Poor	Sparse Canopy; Die-Back	26	Preserve
23	American Sweet Gum	21	60	35	2	4	Fair		36	Preserve
24	American Sweet Gum	19	60	35	3	2	Fair-Poor		32	Preserve
25	American Sweet Gum	20	75	35	4	3	Very Poor		34	Preserve
26	Red Maple (Acer rubrum)	6	20	20	1	2	Good		10	Preserve
27	Multi Japanese Maple (Acer palmatum)	3/3/3/ 2(x3)	10	15	1	2	Good		14	Transplant
28	Flowering Cherry	8	10	15	1	2	Good		14	Remove
29	Multi Japanese Maple	4/ 3(x3)	15	25	1	2	Good		14	Transplant
30	Trident Maple (Acer buegerianum	11	40	40	1	1	Excellent		18	Transplant
31	Copper Beech (Fagus sylvatica'Atropunicea)	7	30	30	1	1	Excellent		12	Transplant
32	Copper Beech	6	30	20	1	3	Good	One-Sided Canopy	10	Remove
33	Japanese Privet (Ligustrum japonicum)	13/11	45	35	1	3	Good		30	Remove

34	Red Maple	6	15	15	4	3	Very Poor	Die-Back	10	Remove for Poor Condition
35	Red Maple	5	15	15	3	2	Fair-Poor	Sparse Canopy	8	Preserve

	Field Data Sheet	Trunk DBH In Inches	Canopy Height In Feet	Canopy Diameter In Feet	Health 1 - 5 = Good to Poor	Structure 1 - 5 = Good to Poor		DBH = Diameter at Breast Height = 54 inches Above Grade (E) = Estimated CD w/ IB = Co-Dominant Leaders with Imbedded Bark, a Structural Weakness	TPZ = Tree Protection Zone for Trees Planned to Preserve	Disposition Of Trees Per Plans
Tree #	**Tree Name**	**DBH**	**Canopy Height**	**Canopy Spread**	**Health/ Structure Integrity**	**Structure Integrity**	**Overall Condition**	**Notes**	**TPZ Diameter in Feet**	**Preserve / Remove**
36	Southern Magnolia (Magnolia grandiflora)	12	30	30	4	3	Very Poor	Very Sparse Canopy	20	Remove for Poor Condition
37	Southern Magnolia	15	40	35	3	2	Fair		26	Preserve
38	Coast Live Oak (Quercus agrifolia)	15	35	40	1	3	Good	Lean to S. Approx. 30 Degrees	26	Remove
39	Coast Live Oak	18	50	40	1	2	Good	Lean to S. Approx. 10 Degrees	30	Remove
40	Coast Live Oak	23	40	30	3	3	Fair	Sparse Canopy; Die-Back	38	Preserve
41	Coast Live Oak	17	35	45	1	1	Excellent		28	Preserve
42	Southern Magnolia	7	20	15	3	2	Fair		12	Preserve
43	Southern Magnolia	18	30	35	3	3	Fair		30	Preserve
44	Southern Magnolia	14	30	30	2	2	Fair-Good		24	Preserve
45	Blue Atlas Cedar (Cedrus atlantica 'Glauca')	57	110	70	1	2	Good		96	Remove
46	Lemon (Citrus species)	5/4/3	12	15	2	4	Fair	Ganoderma disease	12	Remove
47	Copper Beech (Fagus sylvatica 'Atropunicea')	4	15	15	3	2	Fair		7	Remove
48	Southern Magnolia	12	30	35	3	2	Fair		20	Preserve
49	Loquat (Eriobotrya japonica)	11	20	25	1	1	Excellent		18	Preserve
50	Chinese Pistache (Pistacia chinensis)	10	30	30	1	1	Excellent		17	Transplant
51	European Hackberry (Celtis australis)	6	25	20	1	2	Good		10	Preserve
52	European Hackberry	7	35	20	1	2	Good		12	Preserve
53	European Hackberry	5	20	20	1	2	Good		8	Preserve
54	Coast Live Oak	14	30	50	3	1	Fair	Sparse Canopy	24	Remove
55	Coast Live Oak	16	50	40	2	3	Fair	Small Leaves; low shoot Growth; CD w/ IB	27	Preserve
56	Coast Live Oak	34	40	60	1	2	Good		57	Preserve
57	Tawhiwhi (Pittosporum	3/2/2	10	10	4	2	Very Poor		8	Remove
58	Tawhiwhi	3/2	10	10	3	2	Fair		7	Remove
59	Tawhiwhi	5	15	15	1	2	Good		8	Remove
60	Coast Redwood (Sequoia sempervirens)	5	15	15	2	2	Fair-Good	Sub-Dominant to Adjacent Tree # 61	8	Remove
61	Blackwood Acacia (Acacia melanoxylon)	15/15/11	60	60	1	4	Fair-Poor	CD w/ IB @ 18" above Grade; Ganoderma disease on NE side @ 1'	48	Remove
62	Coast Redwood	6	20	15	3	1	Fair	Die-back due to Botryosypheria disease	10	Remove
63	Coast Redwood	52	120	45	1	1	Excellent		87	Remove
64	Coast Live Oak	23/19/ 19/17	70	50	1	3	Fair	CD w/ IB; Previously Cabled	84	Remove
65	Chinese Elm (Ulmus parvifolia)	19	40	30	1	3	Good		32	Preserve
66	Chinese Elm	14	30	35	3	2	Fair	Sparse Canopy	24	Preserve
67	Chinese Elm	21	35	60	1	2	Good		36	Preserve

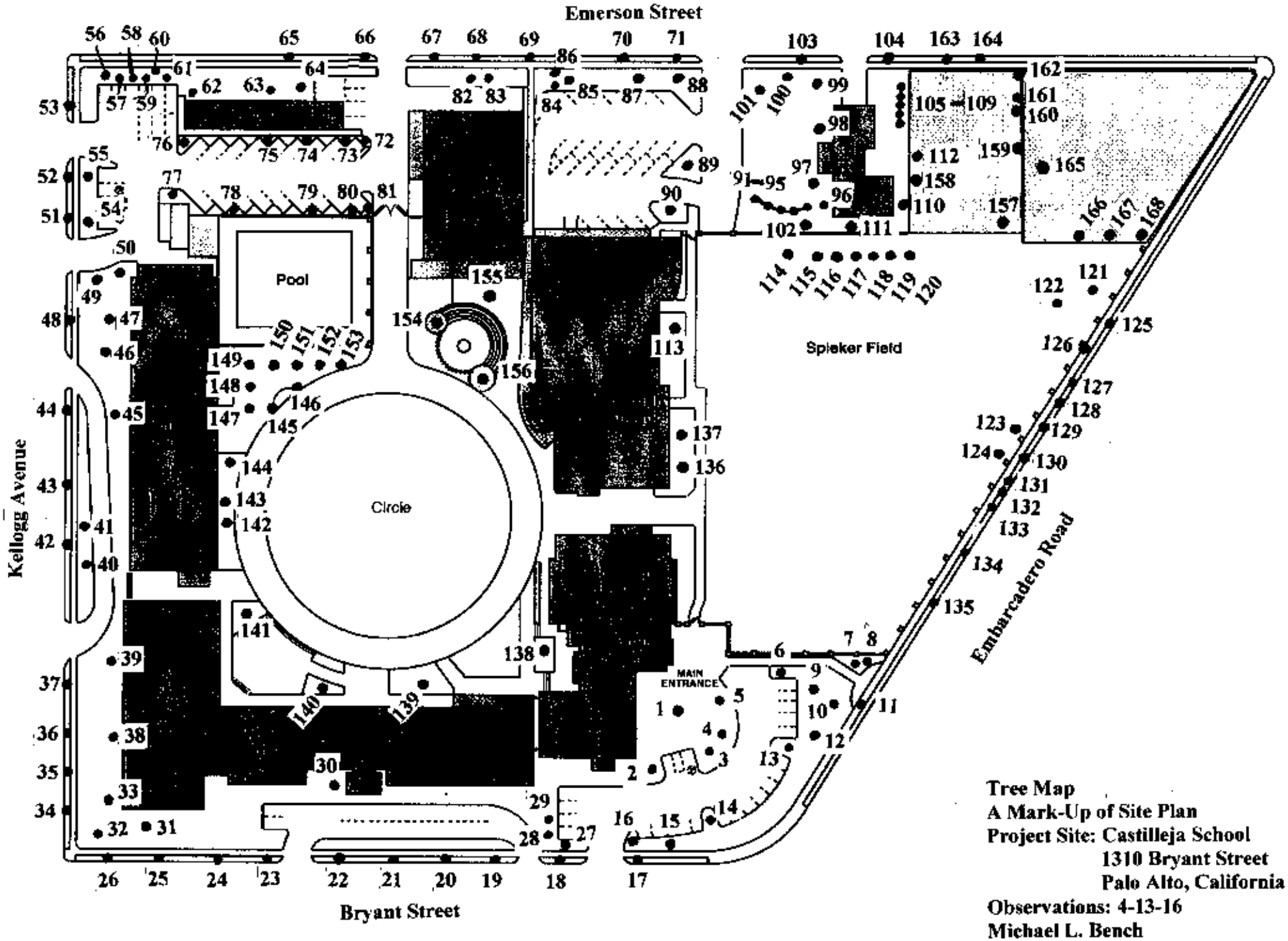
68	Chinese Elm	16	30	35	1	3	Good	One-Sided Canopy	27	Preserve
69	Chinese Elm	20	35	50	2	2	Fair-Good	Slight Die-Back at Top	34	Preserve
70	Chinese Elm	17	35	30	2	3	Fair-Good	Slight Die-Back at Top	28	Preserve

	Field Data	Trunk DBH In Inches	Canopy Height In Feet	Canopy Diameter In Feet	Health 1 - 5 = Good to Poor	Structure 1 - 5 = Good to Poor		DBH = Diameter at Breast Height = 54 inches Above Grade (E) = Estimated CD w/ IB = Co-Dominant Leaders with Imbedded Bark, a Structural Weakness	TPZ = Tree Protection Zone for Trees Planned to Preserve	Disposition Of Trees Per Plans
Tree #	**Tree Name**	**DBH**	**Canopy Height**	**Canopy Spread**	**Health/ Structure Integrity**	**Structure Integrity**	**Overall Condition**	**Notes**	**TPZ Diameter in Feet**	**Preserve / Remove**
71	Chinese Elm (Ulmus parvifolia)	18	40	35	1	4	Fair-Good	CD w/ IB	30	Preserve
72	Chinese Pistache (Pistacia chinensis)	5	15	15	1	1	Excellent		8	Remove
73	Arbutus marina (Arbutus marina)	8	15	20	1	2	Good	Botryospheria on Trunk @ 1 foot	14	Remove
74	Arbutus marina	8	15	20	1	2	Good		14	Remove
75	Arbutus marina	8	15	20	1	2	Good		14	Remove
76	Chinese Pistache	6	15	20	1	1	Excellent		10	Transplant
77	Chinese Pistache	7	20	15	1	1	Excellent		12	Transplant
78	Arbutus marina	5	10	15	2	1	Fair-Good		8	Remove
79	Arbutus marina	4	10	15	2	1	Fair-Good		7	Remove
80	Arbutus marina	5	10	10	2	2	Fair-Good		8	Remove
81	Chinese Pistache	5	12	12	1	1	Excellent		8	Transplant
82	Blackwood Acacia (Acacia melanoxylon)	12/12	60	35	1	4	Fair	Internal Crack Suspected	30	Remove
83	Blackwood Acacia	12/12	45	30	1	4	Fair-Good	Sparse Canopy; CD w/ IB	30	Remove
84	Coast Live Oak (Quercus agrifolia)	28	50	30	1	2	Good		47	Remove
85	Coast Live Oak	15	40	25	1	2	Good		26	Transplant
86	California Bay Laurel (Umbellularia californica)	7/6	30	15	2	3	Fair-Good		17	Preserve
87	Coast Live Oak	23/17	50	35	1	3	Good	CD w/ IB@10 Feet above Grade	52	Preserve
88	English Hawthorne (Crataegus laevigata)	3	10	15	2	1	Good		6	Preserve
89	Coast Live Oak	50	35	50	1	3	Good		84	Remove
90	Grecian Laurel (Laurus nobilis)	2	10	10	1	1	Excellent		4	Remove
91	Hawthorne species (Crataegus species)	4	10	10	1	1	Excellent		7	Remove
92	Hawthorne species	3	10	10	1	1	Excellent		6	Remove
93	Hawthorne species	3	10	10	1	1	Excellent		6	Remove
94	Hawthorne species	3	10	10	1	1	Excellent		6	Remove
95	Hawthorne species	3	10	10	1	1	Excellent		6	Remove
96	Japanese Maple (Acer palmatum)	5/4/ 3(x3)	20	25	1	2	Good		15	Preserve
97	Japanese Maple	4/3(x6)	20	25	1	2	Good		12	Preserve
98	Coast Live Oak	22	50	60	1	1	Excellent		37	Preserve
99	Coast Live Oak	21	50	50	1	2	Good	Wetwood Disease @ 1' above Grade	36	Preserve
100	Coast Live Oak	16	35	35	1	2	Good		27	Transplant
101	English Hawthorne	6	25	20	1	1	Excellent		10	Remove
102	Coast Live Oak	39	60	65	1	4	Fair-Good	CD w/ IB @ 4' above Grade	66	Preserve
103	Chinese Pistache	8	25	25	1	2	Good		14	Preserve
104	Chinese Pistache	9	25	25	1	2	Good	Sub-Dominant To adjacent Tree	16	Preserve
105	Tawhiwhi (Pittosporum tenuifolium)	9	25	25	1	1	Excellent		16	Preserve

	Field Data	Trunk DBH In Inches	Canopy Height In Feet	Canopy Diameter In Feet	Health 1 - 5 = Good to Poor	Structure 1 - 5 = Good to Poor		DBH = Diameter at Breast Height = 54 inches Above Grade (E) = Estimated CD w/ IB = Co-Dominant Leaders with Imbedded Bark, a Structural Weakness	TPZ = Tree Protection Zone for Trees Planned to Preserve	Disposition Of Trees Per Plans
Tree #	**Tree Name**	**DBH**	**Canopy Height**	**Canopy Spread**	**Health/ Structure Integrity**	**Structure Integrity**	**Overall Condition**	**Notes**	**TPZ Diameter in Feet**	**Preserve / Remove**
106	Tawhiwhi (Pittosporum	3/3	20	15	1	3	Good		9	Preserve
107	Tawhiwhi	6/5/3	20	15	1	2	Good		14	Preserve
108	Tawhiwhi	5/4	25	15	1	2	Good		12	Preserve
109	Tawhiwhi	6/6/ 5/5/4	25	20	1	3	Good		19	Preserve
110	Tawhiwhi	8/7/6	35	25	1	2	Good		18	Preserve
111	Coast Live Oak (Quercus agrifolia)	22	50	30	1	2	Good		37	Preserve
112	Coast Redwood	44/27	120	50	1	5	Extremely Poor	Severe Root Collar Decay; Innonotus fungi conks	56	Remove for Safety
113	Coast Live Oak	32	55	70	1	2	Good	Sycamore Moth	54	Preserve
114	Chinese Pistache (Pistacia chinensis)	13	30	30	1	2	Good		22	Transplant
115	Coast Redwood (Sequoia sempervirens)	14	80	25	2	1	Fair-Good	Top 1/3 Canopy - Moderately Sparse	24	Remove
116	Coast Redwood	15	85	25	2	1	Fair-Good	Top 1/3 Canopy - Moderately Sparse	26	Remove
117	Coast Redwood	14	90	25	2	1	Fair-Good	Top 1/3 Canopy - Moderately Sparse	24	Remove
118	Coast Redwood	18	90	25	2	1	Fair-Good	Top 1/3 Canopy - Moderately Sparse	30	Remove
119	Coast Redwood	22	95	25	2	1	Fair-Good	Top 1/3 Canopy - Moderately Sparse	37	Remove
120	Coast Redwood	24	95	25	2	1	Fair-Good	Top 1/3 Canopy - Moderately Sparse	40	Remove
121	Coast Live Oak	27	35	45	1	3	Good	CD w/ IB	46	Remove
122	Coast Live Oak	24	45	40	1	1	Excellent		40	Transplant
123	Deodar Cedar (Cedrus deodara)	19	60	40	1	3	Good	Topped	32	Remove
124	Deodar Cedar	18	75	40	1	1	Excellent		30	Transplant
125	European Hackberry (Celtis australis)	5	15	15	1	2	Good	Moderately Dense	8	Preserve
126	Coast Live Oak	18	35	45	2	1	Fair-Good		30	Preserve
127	European Hackberry	6	15	25	2	1	Fair-Good	Moderately Dense	10	Preserve
128	English Hawthorne	3	10	10	2	1	Fair-Good		6	Preserve
129	European Hackberry	8	20	25	2	2	Fair-Good	Moderately Dense	14	Preserve
130	European Hackberry	7	-----	-----	-----	-----	Dead	----------	--------	Remove
131	Coast Live Oak	10	25	20	1	3	Good	CD w/ IB	17	Preserve
132	Coast Live Oak	15	30	20	1	2	Good		26	Preserve
133	Coast Live Oak	24	25	35	1	2	Good		40	Preserve
134	English Hawthorne	4	15	10	2	1	Fair	Sunscald Damage	7	Preserve
135	European Hackberry	11	25	35	2	1	Fair-Good	Moderately Dense	18	Preserve
136	Eastern Redbud	3	8	10	1	1	Excellent		6	Preserve
137	Eastern Redbud	3	8	10	1	1	Excellent		6	Preserve
138	Coast Live Oak	27	55	65	1	1	Excellent	Has Irrigation	46	Preserve
139	Japanese Maple (Acer palmatum)	6	10	15	1	3	Good	CD w/ IB	10	Remove

140	Coast Live Oak	36	35	60	3-4	2-3	Fair-Poor	Sparse;Die-Back; Needs Irrigation	60	Remove

	Field Data	Trunk DBH In Inches	Canopy Height In Feet	Canopy Diameter In Feet	Health 1 - 5 = Good to Poor	Structure 1 - 5 = Good to Poor		DBH = Diameter at Breast Height = 54 inches Above Grade (E) = Estimated CD w/ IB = Co-Dominant Leaders with Imbedded Bark, a Structural Weakness	TPZ = Tree Protection Zone for Trees Planned to Preserve	Disposition Of Trees Per Plans
Tree #	**Tree Name**	**DBH**	**Canopy Height**	**Canopy Spread**	**Health/ Structure Integrity**	**Structure Integrity**	**Overall Condition**	**Notes**	**TPZ Diameter in Feet**	**Preserve / Remove**
141	Italian Stone Pine (Pinus pinea)	27	35	50	1	1	Excellent		46	Remove
142	Fern Pine (Afrocarpus gracilior)	23	60	35	1	1	Excellent	Formerly (Podocarpus gracilior)	38	Remove
143	Southern Magnolia (Magnolia grandiflora)	18/10	40	25	3	2	Fair	Die-Back	38	Remove
144	Shiny Xylosma (Xylosma congestum)	15	35	35	1	1	Excellent	Typically a Shrub; The Largest I've seen	26	Remove
145	Queen Palm (Syagrus	10	20	15	1	1	Excellent	Trunk Height - 10	17	Transplant
146	Queen Palm	10	20	15	1	1	Excellent	Trunk Height - 12	17	Transplant
147	Queen Palm	9	20	15	1	1	Excellent	Trunk Height - 12	16	Transplant
148	Queen Palm	9	20	15	1	1	Excellent	Trunk Height - 14	16	Transplant
149	Queen Palm	8	20	15	1	1	Excellent	Trunk Height - 10	14	Transplant
150	Queen Palm	10	20	15	1	1	Excellent	Trunk Height - 10	17	Transplant
151	Queen Palm	9	20	15	1	1	Excellent	Trunk Height - 12	16	Transplant
152	Queen Palm	8	20	15	1	1	Excellent	Trunk Height - 12	14	Transplant
153	Queen Palm	8	20	15	1	1	Excellent	Trunk Height - 10	14	Transplant
154	Japanese Maple (Acer palmatum)	5	6	12	2	3	Fair	Sunscald Damage	8	Remove
155	Coast Live Oak (Quercus agrifolia)	27	30	50	3	2	Fair	Moderately Dense; Needs Monthly Irrigation	46	Preserve
156	European Olive (Olea europea)	3 / 2	7	8	1	1	Excellent		8	Transplant
157	Coast Live Oak	17(E)	35	45	1	1	Excellent		28	Preserve
158	Wild Plum (Prunus cerasifera)	4/ 2(X3)	20	25	1	4	Fair	CD w/ IB	8	Remove
159	Coast Live Oak	23	45	70	1	2	Good		38	Preserve
160	Coast Live Oak	31	40	45	1	3	Good		52	Preserve
161	Coast Live Oak	11	35	15	1	3	Good		18	Preserve
162	Coast Live Oak	27	35	60	1	3	Good		46	Preserve
163	Maidenhair Tree (Ginkgo biloba)	4	12	10	2	2	Fair-Good	Drought Stressed	7	Preserve
164	Maidenhair Tree	4	12	10	2	2	Fair-Good	Drought Stressed	7	Preserve
165	Coast Live Oak	26(E)	50	35	1	4	Good	CD w/ IB; On Neighboring Property	44	Preserve
166	Coast Redwood (Sequoia sempervirens)	9/8(E)	25	20	2	2	Fair-Good	Drought Stressed; Minor Die-Back; On Neighboring Property	23	Preserve
167	Valley oak (Quercus lobata)	12(E)	25	25	2	2	Fair-Good	Drought Stressed; Minor Die-Back; On Neighboring Property	20	Preserve
168	Coast Live Oak	24(E)	35	35	1	1	Excellent	On Neighboring Property	40	Preserve



Tree Map
A Mark-Up of Site Plan
Project Site: Castilleja School
1310 Bryant Street
Palo Alto, California
Observations: 4-13-16
Michael L. Bench
Consulting Arborist

Castilleja School
1310 Bryant Street
Palo Alto, CA

Tree # 112

Coast Redwood Tree # 112

Root Collar of Tree # 112

Root Collar of Tree # 112

Decayed Wood of Tree # 112

Visible Decay Conk

Michael L. Bench
Consulting Arborist
ISA #WE 1897A, ASCA Member
(831) 594-5151 michaelbench@sbcglobal.net
7327 Langley Canyon Rd., Prunedale, CA 93907

Site Observations: April 13 and 21, 2016

Subject: Castilleja School
1310 Bryant Street
Palo Alto, California

Assumptions and Limiting Conditions

1. Any description provided to the appraiser/consultant is assumed to be correct. Any titles and ownerships to any property are assumed to be good and marketable. No responsibility is assumed for legal matters in character nor is any opinion rendered as to the quality of any title.

2. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, or other governmental regulations.

3. Care has been taken to obtain information from reliable sources. All data has been verified insofar as reasonably possible. However, the appraiser/consultant can neither guarantee nor be responsible for the accuracy of information provided by others.

4. The appraiser/consultant shall not be required to give testimony or to attend court by reason of this appraisal unless written arrangements are made, including payment of additional fees for services.

5. Loss or removal of any part of this report invalidates the entire appraisal/evaluation.

6. Possession of this report, or any copy thereof, does not imply right of publication or use for any purpose by any person other than to whom this report is addressed without written consent of this appraiser/consultant.

7. Neither all nor any part of the contents of this report, nor copy thereof, shall be used for any purpose by anyone but the client to whom this report is addressed, without the prior written consent of the appraiser/consultant; nor shall it be conveyed by anyone, including the client, to the public through advertizing, public relations, news, sales, or other media, without the written consent and approval of the author; particularly as to value considerations, identity of the appraiser/consultant to any professional society or institute or to any designation conferred upon by the appraiser/consultant as stated in his/her qualifications.

8. This report and the values expressed herein represent the opinion of the appraiser/consultant. Further, the appraiser/consultant's fee is in no way contingent upon the reporting of a specified value nor upon any finding or recommendation reported.

9. Sketches, diagrams, graphs, photos, etc., in this report are intended as visual aides and are not done necessarily to scale and should not be construed as engineering information or specifications.

10. This report has been made in conformity with generally acceptable appraisal/evaluation/diagnostic reporting methods and procedures and is consistent with practices recommended by the International Society of Arboriculture and the American Society of Consulting Arborists.

11. The appraiser/consultant takes no responsibility for any defects in any tree's structure. No tree described in this report/evaluation has been climbed, unless otherwise stated, and, as such, structural defects that could only have been discovered by climbing are not reported. Likewise, a root collar inspection, consisting of excavation of soil around the tree for the purpose of uncovering major root defects/weaknesses, has not been performed, unless otherwise stated.