Preliminary Arborist Report

Cityline Block 3 South, Sunnyvale

Prepared for:
Sares Regis
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San Mateo, CA 94404

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HORT SCIENCE
BARTLETT CONSULTING
A Division of The I.A. Bartlett Tree Expert Company

Preliminary Arborist Report

Cityline Block 3 South
Sunnyvale CA

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Introduction and Overview

Sares Regis is in the process of redeveloping the Cityline project, covering several blocks in downtown Sunnyvale. The site currently contains a temporary green space and parking lot. HortScience | Bartlett Consulting (HBC), Divisions of the F. A. Bartlett Tree Expert Co., was asked to prepare an ***Arborist Report*** for the site for submission to the City of Sunnyvale.

This report provides the following information:

1. An evaluation of the health and structural condition of the trees within the proposed project area based on a visual inspection from the ground.
2. An assessment of the trees suitability for preservation based on its health, structure and potential longevity.
3. An assessment of impacts to trees from the proposed project.
4. The estimated value of each tree.

Tree Assessment Methods

Trees were originally assessed in August of 2018 and reassessed on March 19, 2020. The survey included all trees 4" in diameter and greater, located within and immediately adjacent to the proposed project area, per Sunnyvale Tree Preservation ordinance 19.94. The assessment procedure consisted of the following steps:

1. Identifying the tree as to species;
2. Tagging each tree with an identifying number and recording its location on a map;
3. Measuring the trunk diameter at the 54" above grade;
4. Evaluating the health and structural condition using a scale of 1 – 5:
   - ***5*** - A healthy, vigorous tree, reasonably free of signs and symptoms of disease, with good structure and form typical of the species.
   - ***4*** - Tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.
   - ***3*** - Tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that might be mitigated with regular care.
   - ***2*** - Tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.
   - ***1*** - Tree in severe decline, dieback of scaffold branches and/or trunk; most of foliage from epicormics; extensive structural defects that cannot be abated.
5. Rating the suitability for preservation as "high", "moderate" or "low". Suitability for preservation considers the health, age and structural condition of the tree, and its potential to remain an asset to the site for years to come.
   - ***High***: Trees with good health and structural stability that have the potential for longevity at the site.
   - ***Moderate***: Trees with somewhat declining health and/or structural defects than can be abated with treatment. The tree will require more intense management and monitoring, and may have shorter life span than those in 'high' category.
   - ***Low***: Tree in poor health or with significant structural defects that cannot be mitigated. Tree is expected to continue to decline, regardless of treatment. The species or individual may have characteristics that are undesirable for landscapes, and generally are unsuited for use areas.

Description of Trees

Eleven (11) trees were evaluated, representing three species. Five (5) street trees (#332-336) on S. Taaffe St. were included in the assessment. Descriptions of each tree are found in the ***Tree Assessment Form*** and approximate locations are shown on the ***Tree Assessment Map*** (see Exhibits).

The 6 coast redwood trees were located in an open park setting, with perimeter paths (Photo 1). The growing areas were covered with mulch and were receiving supplemental irrigation via overhead spray.

All 6 coast redwoods were mature in form and development. Trunk diameters ranged from 31" to 51" and tree condition varied from fair (trees #4 and 5) to good (#1-3 and 6). Foliar density ranged from 75% to 90% and all of the trees showed vigorous new growth. Trees #3, 4 and 5 all showed some dieback, especially in the upper crown. All of the trees had the pyramidal shape typical of the species. However, coast redwoods #1 and 2 had lost their tops, producing several new leaders at the top of trees. Coast redwood #4 had a large trunk wound on the south side where the bark had separated from the trunk. The cause of the injury was not evident.

Photo 1: Looking southwest at coast redwoods #1-6 (L to R). The trees are currently preserved in an open park-like setting, with a plan to construct an underground garage and residential units around them.

The 5 street trees on S. Taaffe Street included the following:

- Four (4) young water gums (4" to 6" in diameter). Three (3) were in good condition and #332 was in fair.
- Coast live oak #336, which was semi-mature at 12" in trunk diameter. It was in good condition, despite showing some borer damage on the lower trunk.

Table 1. Condition ratings and frequency of occurrence of trees
Cityline Block 3 South - Sunnyvale, CA

Common Name	Scientific Name	Condition			Total
		Poor (1-2)	Fair (3)	Good (4-5)	
Coast redwood	*Sequoia sempervirens*	-	1	5	6
Coast live oak	*Quercus agrifolia*	-	-	1	1
Water gun	*Tristaniopsis laurina*	-	1	3	4
Total		**0**	**2**	**9**	**11**
		0%	18%	82%	100%

Overall, 2 trees were in fair condition and the remaining 9 were in good (Table 1). None of the trees were in poor condition. The City of Sunnyvale Tree Preservation Ordinance 2623-99, Chapter 19.94 defines any single-trunk tree with a trunk diameter of 12" or greater or any multi-trunked tree with a cumulative diameter of 36" or greater as a *Significant Size Tree*. By this definition, 7 of the trees evaluated qualified as a *Significant Size Tree* and are protected. Protected status of individual trees is provided in the ***Tree Assessment Form***.

Suitability for Preservation

Trees that are preserved on sites were development or other improvements are planned, must be carefully selected to make sure that they may survive construction impacts, adapt to a new environment and perform well in the landscape. Our goal is to identify trees that have the potential for long-term health, structural stability and longevity. Evaluation of suitability for preservation considers several factors:

- **Tree health**
  Healthy, vigorous trees are better able to tolerate impacts such as root injury, demolition of existing structures, changes in soil grade and moisture, and soil compaction than are non-vigorous trees. Trees in good condition are in better health than those in poor condition.

- **Structural integrity**
  Trees with significant amounts of wood decay and other structural defects that cannot be corrected are likely to fail. Such trees should not be preserved in areas where damage to people or property is likely.

- **Species response**
  There is a wide variation in the response of individual species to construction impacts and changes in the environment. In our experience, coast redwood and coast live oak are relatively tolerant of construction impacts while water gum is less so.

- **Tree age and longevity**
  Old trees, while having significant emotional and aesthetic appeal, have limited physiological capacity to adjust to an altered environment. Young trees are better able to generate new tissue and respond to change.

- **Species invasiveness**
  Species which spread across a site and displace desired vegetation are not always appropriate for retention. This is particularly true when indigenous species are displaced. The California Invasive Plant Inventory Database (http://www.cal-ipc.org/paf/) lists species identified as having being invasive. Sunnyvale is part of the Central West Floristic Province. None of the species assessed at the Cityline Block 3 South site were listed as invasive.

Each tree was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment (Table 2).

We consider trees with high suitability for preservation to be the best candidates for preservation during development. We do not recommend retention of trees with poor suitability for preservation in areas where people or property will be present. Retention of trees with moderate suitability for preservation depends upon the intensity of proposed site changes.

Table 2. Tree suitability for preservation.
Cityline Block 3 South - Sunnyvale, CA

High	Trees with good health and structural stability that have the potential for longevity at the site. Water gum #333 was the only tree rated as having high suitability for preservation.
Moderate	Trees in fair health and/or possessing structural defects that may be abated with treatment. Trees in this category require more intense management and monitoring, and may have shorter life-spans than those in the "high" category. Ten (10) trees were rated as having moderate suitability for preservation; including all 6 of the coast redwoods, water gums #332, 334 and 335 and coast live oak #336.
Low	Trees in poor health or possessing significant defects in structure that cannot be abated with treatment. These trees can be expected to decline regardless of management. The species or individual tree may possess either characteristics that are undesirable in landscape settings or be unsuited for use areas. None of the trees were rated as having low suitability for preservation.

Preliminary Evaluation of Impacts and Recommendations

Appropriate tree retention develops a practical match between the location and intensity of construction activities and the quality and health of trees. The ***Tree Assessment*** was the reference point for tree condition and quality. Potential impacts from construction were evaluated using the Planning Submittal #1, prepared by Heller Manus Architects (dated February 7, 2020).

The plan proposes to construct a 12-story mixed-use development in 2 buildings, with a central courtyard opening towards McKinley Avenue. A 2-story subterranean garage would extend beneath three-quarters of the site, with the exception of the courtyard. Garage access would be through two ramps on the new street to the north.

Using the proposed plans, potential impacts from construction were estimated for each tree. Impacts to street trees would be associated with potential changes to the street layout, routing of utilities and design and placement of building entries. Impacts to the redwood trees would be associated with the excavation for the underground garage (tree #6) and construction of planting areas, seat walls and decking within the new courtyard around the trees.

Coast redwood #6
In general, I consider transplanting a high risk and high cost proposition. I have discouraged Sares Regis from proposing to transplant coast redwood #6, as I feel the risk far outweighs the potential benefits. My professional opinion is that purchasing and installing a young, vigorous coast redwood with a full root system will maximize the benefits provided to the community for the longest possible time.

Coast redwoods #1-5 and street trees #332-336
This group of 5 trees is centrally located along the southern boundary of Block 3 South, adjacent to McKinley Avenue. All 5 redwoods are proposed for preservation in their existing locations.

With the exception of tree #5, excavation for the underground garage will occur from approximately 30' to 60' from the trees, providing ample room to successfully preserve the trees. Tree #5 would be located approximately 12' south of the underground garage excavation. At this distance, some root loss will occur.

The current design for the courtyard surrounding coast redwoods #1-5 includes construction of seat walls at the limits of the planting areas surrounding the trees. I have worked with the design team to locate seat walls at the or beyond the limits of the **TREE PROTECTION ZONES** (**TPZ**) I defined early in the process. Where seat walls will encroach into the TPZ, grade beams or other design approaches to span the TPZ and minimize root loss will be employed.

In addition, decking will be placed around the trees within the TPZs. Again, the exact design and location of deck supports has not been finalized but alternative footings such as ground screws or diamond piers are been evaluated. I will continue to work with the design team to minimize intrusions and potential root loss within the TPZs.

Based on my review of the plans, coast redwood #6 and street trees #332-335 will be removed to accommodate the proposed changes.

Coast redwoods #1-5 are preliminarily identified for preservation, pending more information on the design of the seat walls and decking around them. Street tree #336 on S. Taaffe St. can be preserved. Preservation will require the establishment of a **TREE PROTECTION ZONE,** and other design considerations described in the ***Tree Preservation Guidelines*** (following page).

Tree protection zones for coast redwoods #1-5 described in the ***Preliminary Tree Preservation Guidelines*** were based on the species, diameter, and condition of the trees combined with my assessment of the existing grades around the trees in the field.

Preliminary Tree Preservation Guidelines are provided to help guide the design around the trees and minimize damage to them from the proposed changes. As the design around the coast redwoods is developed preservation guidelines can be fine-tuned and finalized.

Estimate of Value

The City of Sunnyvale requires that the value of all of the surveyed trees be established. To accomplish this, I used the standard methods found in *Guide for Plant Appraisal*, 9th edition (published in 2000 by the International Society of Arboriculture, Champaign IL). In addition, I referred to *Species Classification and Group Assignment* (2004), a publication of the Western Chapter of the International Society of Arboriculture. These two documents outline the methods employed in tree appraisal.

The value of landscape trees is based upon four factors: size, species, condition and location. Size is measured as trunk diameter, normally 54" above grade. The species factor considers the adaptability and appropriateness of the plant in the South Bay area. The *Species Classification and Group Assignmen*t lists recommended species ratings and evaluations. Condition reflects the health and structural integrity of the individual, as noted in the ***Tree Assessment Form***. Location factor considers the site, placement, and contribution of the tree in its surrounding landscape.

The estimated value of the 11 trees assessed at the Cityline Block 3 South site was $103,200 (Table 3).

Table 3. Estimated value of trees
Cityline Block 3 South - Sunnyvale, CA

Tree No.	Common Name	Size (in.)	Protected	Estimated Value ($)
1	Coast redwood	49	Yes	21,450
2	Coast redwood	50	Yes	21,950
3	Coast redwood	31	Yes	10,550
4	Coast redwood	51	Yes	16,050
5	Coast redwood	47	Yes	14,550
6	Coast redwood	37	Yes	14,500
332	Water gum	4	No	250
333	Water gum	6	No	650
334	Water gum	6	No	650
335	Water gum	5	No	500
336	Coast live oak	12	Yes	2,100
Total				**103,200**

Preliminary Tree Preservation Guidelines

The following recommendations will help reduce impacts to trees from development as well as maintain and improve their health and vitality through the clearing, grading and construction phases.

Design recommendations

1. Have the vertical and horizontal locations of all the trees identified for preservation established and plotted on all plans. Forward these plans to the Consulting Arborist for review and comment.

2. All plans affecting trees shall be reviewed by the Consulting Arborist with regard to tree impacts. These include, but are not limited to, demolition plans, grading and utility plans, landscape and irrigation plans.

3. Consider the following when designing the courtyard around the coast redwoods:
   - Maintain an undisturbed area of 12' to 20' in all directions around the trees, per the following table.
   - Design drain lines or other utilities located within the islands to be kept as far from the trees as possible, ideally locating them at the edge of the islands/at the back of concrete curbs/walls.
   - Design irrigation lines within the islands to be placed on grade or as close to grade as possible and covered with 3-4" of course wood chips. I recommend no more than 6" of trenching for irrigation lines within the islands.

Specific Tree Protection Zones

Tree No.	TPZ
1	20' N.; 12' S.; 15' E. & W.
2	20' N.& S.; 15' E. & W.
3	15' N.& S.; 12' E. & W.
4	20' N.& S.; 15' E., 15' W.
5	12' N., 20' S.; 15' E., 15' W.
334-336	Dripline in all directions

4. It will be critical for their survival that the trees continue to receive supplemental irrigation prior to, during and following construction. Maintain the existing temporary irrigation system in a fully operational state prior to and during the construction phases to supply the trees with water and help prepare them for impacts associated with the construction process.

5. For trees identified for preservation, designate a **Tree Protection Zone** in which no construction, grading and underground services including utilities, sub-drains, water or sewer will be located. No grading, excavation, construction or storage of materials shall occur within that zone.

6. No underground services including utilities, sub-drains, water or sewer shall be placed in the **Tree Protection Zone**.

7. Irrigation systems must be designed so that no trenching will occur within the **Tree Protection Zone**.

8. As trees withdraw water from the soil, expansive soils may shrink within the root area. Therefore, foundations, footings and pavements on expansive soils near trees should be designed to withstand differential displacement.

Pre-construction treatments and recommendations

1. The demolition contractor shall meet with the Consulting Arborist before beginning work to discuss work procedures and tree protection.

2. Where possible, cap and abandon all existing underground utilities within the **TPZ** in place. Removal of utility boxes by hand is acceptable but no trenching should be performed within the **TPZ** in an effort to remove utilities, irrigation lines, etc.

3. Fence all trees to be retained to completely enclose the **Tree Protection Zone** prior to demolition, grubbing or grading. Fences shall be 6 ft. chain link or equivalent as approved by the Consulting Arborist. Fences are to remain until all grading and construction is completed.

4. Prune trees to be preserved to clean the crown of dead branches 1" and larger in diameter and raise canopies as needed for construction activities. All pruning shall be done by a State of California Licensed Tree Contractor (C61/D49). All pruning shall be done by Certified Arborist or Certified Tree Worker in accordance with the Best Management Practices for Pruning (International ociety of Arboriculture, 2002) and adhere to the most recent editions of the American National Standard for Tree Care Operations (Z133.1) and Pruning (A300).

5. All tree work shall comply with the Migratory Bird Treaty Act as well as California Fish and Wildlife code 3503-3513 to not disturb nesting birds. Tree pruning and removal should be scheduled outside of the breeding season to avoid scheduling delays. Breeding bird surveys should be conducted prior to tree work. Qualified biologists should be involved in establishing work buffers for active nests.

6. All down brush, weeds or other vegetation shall be removed from the **Tree Protection Zone** either by hand, or with equipment sitting outside the **Tree Protection Zone**. Extraction shall occur by lifting the material out, not by skidding across the ground.

7. Apply and maintain 4-6" of wood chip mulch within the **Tree Protection Zone.** Wood chips produced through pruning operations at the park would be well suited to this application.

Recommendations for tree protection during construction

1. Prior to beginning work, the contractors working in the vicinity of trees to be preserved are required to meet with the Consulting Arborist at the site to review all work procedures, access routes, storage areas and tree protection measures.

2. All contractors shall conduct operations in a manner that will prevent damage to trees to be preserved.

3. Tree protection fences are to remain until all site work has been completed. Fences may not be relocated or removed without permission of the Consulting Arborist.

4. Construction trailers, traffic and storage areas must remain outside fenced areas at all times.

5. Prior to grading, pad preparation, excavation for foundations/footings/walls, trenching, trees may require root pruning outside the **Tree Protection Zone** by cutting all roots cleanly to the depth of the excavation. Roots shall be cut by manually digging a trench and cutting exposed roots with a saw, with a vibrating knife, rock saw, narrow trencher with sharp blades, or other approved root pruning equipment. The Consulting Arborist will identify where root pruning is required and monitor all root pruning activities.

6. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Consulting Arborist so that appropriate treatments can be applied.

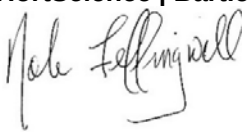
7. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the **Tree Protection Zone**.

8. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.

9. All trees shall be irrigated on a schedule to be determined by the Consulting Arborist (every 2 to 4 weeks April through October is typical). Each irrigation shall wet the soil within the **Tree Protection Zone** to a depth of 24".

Maintenance of impacted trees
Preserved trees will experience a physical environment different from that pre-development. As a result, tree health and structural stability should be monitored. Occasional pruning, fertilization, mulch, pest management, replanting and irrigation may be required. In addition, provisions for monitoring both tree health and structural stability following construction must be made a priority. As trees age, the likelihood of failure of branches or entire trees increases. Therefore, annual inspection for structural condition is recommended.

HortScience | Bartlett Consulting



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Attached: ***Tree Assessment Form***

Tree Assessment Map

Exhibits

Tree Assessment Form

Tree Assessment Map

Tree Assessment

Cityline - Block 3 South
Sunnyvale, California
March 2020

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TREE No.	SPECIES	TRUNK DIAMETER (in.)	PROTECTED	CONDITION 1=poor 5=excellent	SUITABILITY for PRESERVATION	COMMENTS	Driplines (ft.) North	South	East	West
1	Coast redwood	49	Yes	4	Moderate	Upright form; lost top; good foliar density: small dead branches in crown.	12	20	22	15
2	Coast redwood	50	Yes	4	Moderate	Upright form; lost top; good foliar density.	20	12	20	15
3	Coast redwood	31	Yes	4	Moderate	Good form and structure; minor dieback.	15	12	10	15
4	Coast redwood	51	Yes	3	Moderate	Slight lean S.; large wound w/ bark separating from trunk S.; sparse crown.	10	20	18	15
5	Coast redwood	47	Yes	3	Moderate	Slight lean S.; base growing over old curb N.; a little sparse at the top.	15	15	20	15
6	Coast redwood	37	Yes	4	Moderate	Trunk sweeps S.; good foliar density; yellow jacket nest at base W.	18	15	20	12
332	Water gum	4	No	3	Moderate	Street tree; no tag; thin crown; poor color.	5	5	5	5
333	Water gum	6	No	4	High	Street tree; no tag; full, dense crown; planted low surrounded by grate.	6	6	6	4
334	Water gum	6	No	4	Moderate	Street tree; no tag; full, dense crown; low lateral limbs; planted low surrounded by grate.	7	6	5	5
335	Water gum	5	No	4	Moderate	Street tree; no tag; slightly thin; planted low surrounded by grate.	6	4	6	5
336	Coast live oak	12	Yes	4	Moderate	Street tree; no tag; full, dense crown; boring damage on lower trunk.	12	11	18	14

Tree Assessment Plan

Cityline
Sunnyvale, CA

Prepared for:
Sares Regis
San Mateo, CA

August 2018
Updated March 2020

No Scale

Notes:

Base map provided by:
Google Maps

Numbered tree locations are approximate

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