

Appendix B

Arborist Report

Civic Center Family Housing Project Initial Study

City of Santa Clara



Preliminary Arborist Report

1601 Civic Center Drive
Santa Clara, CA

PREPARED FOR
Charities Housing Development Corporation
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Divisions of The F.A. Bartlett Tree Expert Company

Preliminary Arborist Report
1601 Civic Center Drive
Santa Clara, CA

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Preliminary Arborist Report

1601 Civic Center Drive

Santa Clara, CA

Introduction and Overview

Charities Housing Development Corporation is planning to redevelop 1601 Civic Center Drive in Santa Clara. The site currently contains? Consists? of several commercial buildings with associated landscapes and parking. HortScience I Bartlett Consulting, divisions of The Bartlett Tree Expert Company was asked to prepare a **Preliminary Arborist Report** for the site as part of the application to the City of Santa Clara.

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. A preliminary assessment of the trees that would be preserved and removed based on the development plans of Charities Housing.
3. A preliminary estimate of the number of trees required to be planted for mitigation.

Tree Assessment Methods

Trees were assessed on February 11, 2020. Trees were tagged with numbers #132- 150. The survey included trees 4 inches in diameter and greater as well as cedars, redwoods, oaks, olives, bays, peppers and street trees of any size. The assessment procedure consisted of the following steps:

1. Identifying the tree species;
2. Tagging each tree with an identifying number and recording its location on a map;
3. Measuring the trunk diameter at a point 48 inches 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

Nineteen (19) trees representing four species were evaluated (Table 1). Thirteen (13) were in fair condition, six trees were in poor condition and no trees were in good condition. No off-site trees were included in the assessment. Descriptions of each tree are found in the **Tree Assessment Form** and locations are plotted on the **Tree Inventory Plan** (see Exhibits).

**Table 1. Condition ratings and frequency of occurrence of trees
 1601 Civic Center Drive Santa Clara, CA**

Common Name	Scientific Name	Condition			Total
		Poor (1-2)	Fair (3)	Good (4-5)	
Sweetgum	<i>Liquidambar styraciflua</i>	4	1	-	5
African fern pine	<i>Afrocarpus falcatus</i>	-	2	-	2
Olive	<i>Olea europaea</i>	2	9	-	11
Purple leaf plum	<i>Prunus cerasifera</i>	-	1	-	1
Total		6	13	-	19

The most common species present was olive with 11 trees (58% of the population). The olives ranged from poor (2 trees) to fair (9 trees) condition. All had either multiple trunks arising from the base or were codominant, where a stem had been removed (Photo 1). Many of the olives had pruning wounds. Olives were semi-mature with trunk diameters ranging from 9 to 17 inches.

Photo 1 (left): Olive #143 was located in a narrow parking lot planter.
Photo 2 (right): A stem had been removed at 3 feet on the south.



Five (5) sweetgums were growing near the street on the eastern property line. The sweetgums were in poor (4 trees) to fair (1 tree) condition. All but one (#140) of the sweetgums had been topped. The sweetgums were young with 7 to 8 inch trunk diameters.



Photo 3 (above): Five sweetgums were growing on along Lincoln.

Two (2) African fern pines were located 3 feet from the building on the north. African fern pines were in fair condition and had been hedged. They both had multiple trunks from the base.

One purpleleaf plum (#142) was in fair condition. It had multiple trunks arising from a single point at 3 feet. The semi-mature plum had trunk diameters of 4, 7, 7, and 11 inches. Branches were fused on the east and there was a bulge on the south trunk at 2 feet.

The City of Santa Clara General Plan 5.10.1-P4 defines *Protected Trees* as “healthy cedars, redwoods, oaks, olives, bay laurel and pepper trees of any size, and all other trees over 36 inches in circumference (12 inches diameter) measured from 48 inches above-grade on private and public property as well as in the public right-of-way”. By this definition, there were nine *Protected Trees* at the site. Heritage trees are specific trees adopted by the City of Santa Clara and listed in the General Plan Appendix 8.10. There were no *Heritage Trees* identified at this site.

Suitability for Preservation

Before evaluating the impacts that will occur during development, it is important to consider the quality of the tree resource itself, and the potential for individual trees to function well over an extended length of time. Trees that are preserved on development sites must be carefully selected to make sure that they may survive development 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. For trees growing in open fields, away from areas where people and property are present, structural defects and/or poor health presents a low risk of damage or injury if they fail. However, we must be concerned about safety in use areas. Therefore, where development encroaches into existing plantings, we must consider their structural stability as well as their potential to grow and thrive in a new environment. Where development will not occur, the normal life cycles of decline, structural failure and death should be allowed to continue.

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. Olive #133 had decay at the base and a girdled stem.
- **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. For example, sweetgums #135-139 had been topped. Growth arising from topping wounds is weakly attached and can be prone to breakage.
- **Species response**
There is a wide variation in the response of individual species to construction impacts and changes in the environment.
- **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 that 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 being invasive. This site is part of the Central West Floristic Province. Olive is listed as having limited invasiveness potential.

Each tree was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment (see **Tree Assessment** in Exhibits, and Table 2). We consider trees with good suitability for preservation to be the best candidates for preservation. 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
1601 Civic Center, Santa Clara, CA.**

High	These are trees with good health and structural stability that have the potential for longevity at the site. None of the trees had a high suitability for preservation.
Moderate	Trees in this category have fair health and/or structural defects that may be abated with treatment. These trees require more intense management and monitoring, and may have shorter life-spans than those in the “high” category. Ten (10) trees had a moderate suitability for preservation: six olives (#134, 138, 141, 148, and 149), two African fern pines (#144 and 145), one purpleleaf plum (#142), and one sweetgum (#140).
Low	Trees in this category are in poor health or have 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. Nine (9) trees had a low suitability for preservation: five olives (#132, 133, 146, 147, and 150) and four sweetgums (#135-137 and 139)

Preliminary Evaluation of Impacts and Recommendations for Preservation

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. Development plans have not yet been finalized. Surveyed trunk locations were provided for each tree evaluated.

At this point in the planning process, nine trees (#132, 133, 135, 137, 139, 146, 147, and 150) are recommended for removal based on poor suitability for preservation; four are considered protected. Two (2) African fern pine trees were growing 3' from the building. The limited space for a fern pine to reach its full potential would be challenging. Although five of the olives (#134, 138, 143, 148 and 149) were in fair condition, three trees (#134, 138 and 148) had wounds and #149 had decay at the base. The north stem of olive #134 was girdled. Further assessment of tree impacts and potential for preservation will be made when site plans are prepared.

Tree Replacement Requirements

The City of Santa Clara General Plan 5.3.1-P10 states:

Provide opportunities for increased landscaping and trees in the community, including requirements for new development to provide street trees and a minimum 2:1 on- or off-site replacement for trees removed as part of the proposal.

Preliminary Tree Preservation Guidelines

The goal of tree preservation is not merely tree survival during development but maintenance of tree health and beauty for many years. Trees retained on sites that are either subject to extensive injury during construction or are inadequately maintained become a liability rather than an asset. The response of individual trees will depend on the amount of excavation and grading, the care with which demolition is undertaken, and the construction methods. Coordinating any construction activity inside the **TREE PROTECTION ZONE** can minimize these impacts.

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

Tree Protection Zone

1. **A TREE PROTECTION ZONE** shall be identified for each tree to be preserved. The **TREE PROTECTION ZONE** shall be the dripline.
2. However, the fencing delineating the extent of the **TREE PROTECTION ZONE** may be the property line. Fences shall be 6 ft. chain link with posts sunk into the ground or equivalent as approved by the City.
3. Fences must be installed prior to beginning demolition and must remain until construction is complete.

Design recommendations

1. Any changes to the plans affecting the trees should be reviewed by the Project Arborist with regard to tree impacts. These include, but are not limited to, site plans, improvement plans,

utility and drainage plans, grading plans, landscape and irrigation plans, and demolition plans.

2. Irrigation systems must be designed so that no trenching severs roots larger than 1 inch in diameter will occur within the **TREE PROTECTION ZONE**.
3. **Tree Preservation Guidelines** prepared by the Project Arborist, which include specifications for tree protection during demolition and construction, should be included on all plans.
4. Any herbicides placed under paving materials must be safe for use around trees and labeled for that use.
5. Do not lime the subsoil within 50 feet of any tree. Lime is toxic to tree roots.
6. 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.
7. Ensure adequate but not excessive water is supplied to trees; in most cases occasional irrigation will be required. Avoid directing runoff toward trees.

Pre-demolition and pre-construction treatments and recommendations

1. The demolition and construction superintendents shall meet with the Project Arborist before beginning work to review all work procedures, access routes, storage areas, and tree protection measures.
2. Fence all trees to be retained to completely enclose the **TREE PROTECTION ZONE** prior to demolition, grubbing or grading. Fences shall be 6 feet chain link. Fences are to remain until all grading and construction is completed.
3. Branches extending into the work area that can remain following demolition shall be tied back and protected from damage.
4. Prune trees to be preserved to clean the crown of dead branches 1 inch and larger in diameter, raise canopies as needed for construction activities.
 - a. 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 Society of Arboriculture, 2002) and adhere to the most recent editions of the American National Standard for Tree Care Operations (Z133.1) and Pruning (A300).
 - b. The Project Arborist will provide pruning specifications prior to site demolition.
 - c. Branches extending into the work area that can remain following demolition shall be tied back and protected from damage.
 - d. While in the tree the arborist shall perform an aerial inspection to identify any defects, weak branch and trunk attachments and decay not visible from the ground. Any additional work needed to mitigate defects shall be reported to the property owner.
5. Structures and underground features to be removed within the **TREE PROTECTION ZONE** shall use equipment that will minimize damage to trees above and below ground and operate from outside the **TREE PROTECTION ZONE**. Tie back branches and wrap trunks with protective materials to protect from injury as directed by the Project Arborist. The Project Arborist shall be on site during all operations within the **TREE PROTECTION ZONE** to monitor demolition activity.
6. 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. To the extent feasible tree pruning and

removal should be scheduled outside of the breeding season. Breeding bird surveys should be conducted prior to tree work. Qualified biologists should be involved in establishing work buffers for active nests.

Recommendations for tree protection during construction

1. Any approved grading, construction, demolition or other work within the **TREE PROTECTION ZONE** should be monitored by the Project Arborist.
2. All contractors shall conduct operations in a manner that will prevent damage to trees to be preserved.
3. Tree protection devices are to remain until all site work has been completed within the work area. Fences or other protection devices may not be relocated or removed without permission of the Project Arborist.
4. Construction trailers, traffic and storage areas must remain outside **TREE PROTECTION ZONE** at all times.
5. Any root pruning required for construction purposes shall receive the prior approval of and be supervised by the Project Arborist. Roots should be cut with a saw to provide a flat and smooth cut. Removal of roots larger than 2 inches in diameter should be avoided.
6. If roots 2 inches and greater in diameter are encountered during site work and must be cut to complete the construction, the Project Arborist must be consulted to evaluate effects on the health and stability of the tree and recommend treatment.
7. Any brush clearing required within the **TREE PROTECTION ZONE** shall be accomplished with hand-operated equipment.
8. All down brush and trees 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.
9. Prior to grading or trenching, trees may require root pruning outside the **TREE PROTECTION ZONE**. Any root pruning required for construction purposes shall receive the prior approval of, and be supervised by, the Project Arborist.
10. Spoil from trench, footing, utility or other excavation shall not be placed within the **TREE PROTECTION ZONE**, neither temporarily nor permanently.
11. All trees shall be irrigated on a schedule to be determined by the Project Arborist (every 3 to 6 weeks is typical). Each irrigation shall wet the soil within the **TREE PROTECTION ZONE** to a depth of 30 inches.
12. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Project Arborist so that appropriate treatments can be applied.
13. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the **TREE PROTECTION ZONE**.
14. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.
15. Trees that accumulate a sufficient quantity of dust on their leaves, limbs and trunk as judged by the Project Arborist shall be spray-washed at the direction of the Project Arborist.

Maintenance of impacted trees

Our procedures included assessing trees for observable defects in structure. This is not to say that trees without significant defects will not fail. Failure of apparently defect-free trees does occur, especially during storm events. Wind forces, for example, can exceed the strength of defect-free wood causing branches and trunks to break. Wind forces coupled with rain can saturate soils, reducing their ability to hold roots, and blow over defect-free trees. Although we cannot predict all failures, identifying those trees with observable defects is a critical component of enhancing public safety.

Furthermore, trees change over time. Our inspections represent the condition of the tree at the time of inspection. As trees age, the likelihood of failure of branches or entire trees increases. Annual tree inspections are recommended to identify changes to tree health and structure. In addition, trees should be inspected after storms of unusual severity to evaluate damage and structural changes. Initiating these inspections is the responsibility of the client and/or tree owner.

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.

If you have any questions regarding my observations or recommendations, please contact me.

HortScience I Bartlett Consulting



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Exhibits

Tree Inventory Map
Tree Assessment Form



Tree Assessment Plan

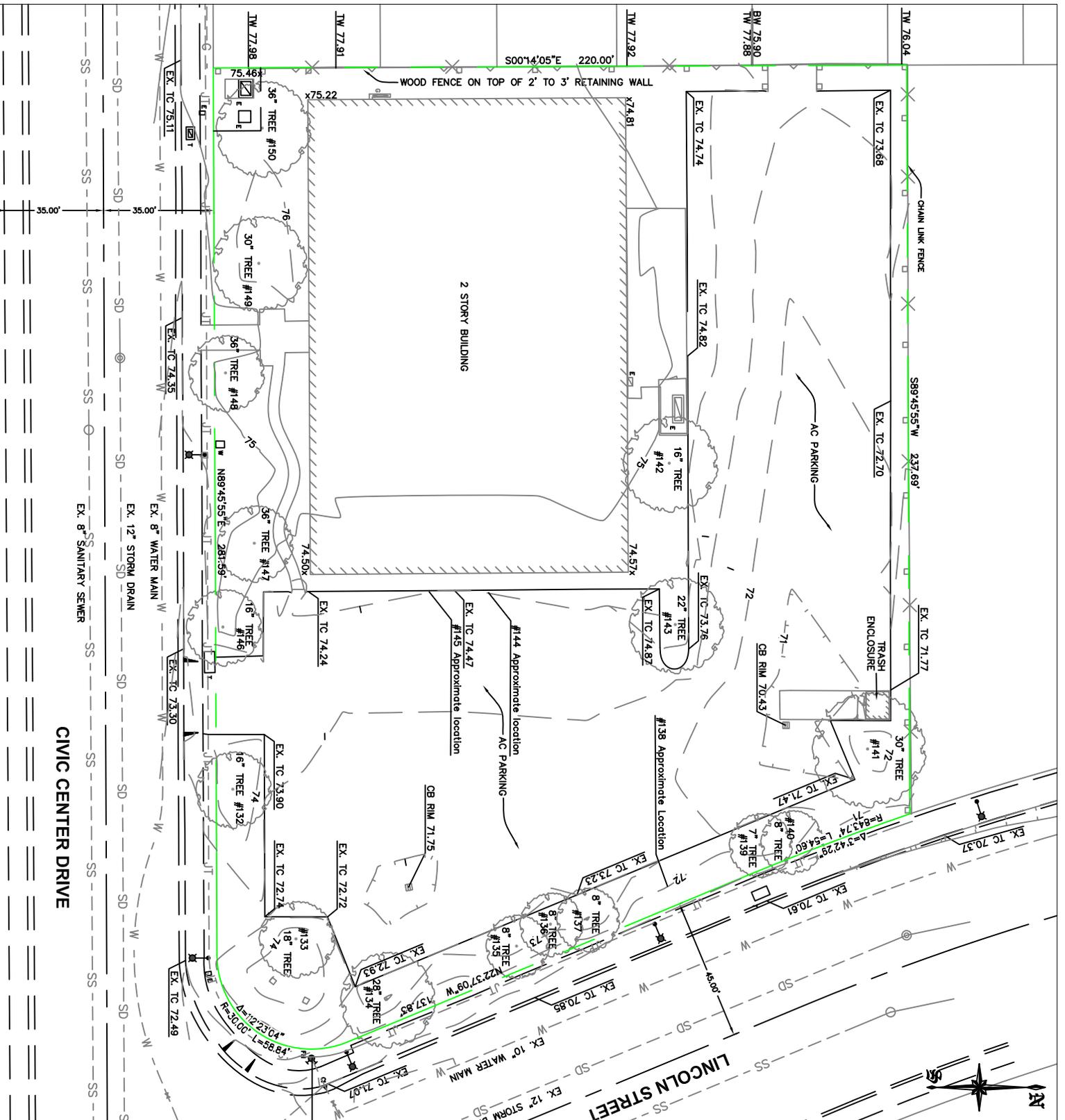
1601 Civic Center Drive
Santa Clara, CA

Prepared for:
Charities Housing Development Corp.
San Jose, CA

February 2020

No Scale

Notes:
Base map provided by:
Charles W. Davidson Co.
San Jose, CA
Numbered tree locations with no survey point were
approximately located in the field.



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Tree Assessment

Charaities Housing
Santa Clara
February 11, 2020



Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 1=poor 5=excellent	Suitability for Preservation	Comments
132	Olive	15	Yes	2	Low	South stem removed leaving large wound; north stem self correcting lean; poor pruning cuts; history of branch failure N; epicormic growth.
133	Olive	11,7,7	No	2	Low	Multiple trunks arise from 3'; decay W at base; epicormic growth; SW stem girdled.
134	Olive	16,9	Yes	3	Moderate	Multiple trunks arise from 2'; south stem removed leaving large pruning wound; epicormic growth; dense canopy; girdled stem N.
135	Sweetgum	8	No	2	Low	Multiple trunks arise from 4'; topped.
136	Sweetgum	8	No	2	Low	Topped.
137	Sweetgum	8	No	2	Low	Self correcting lean; topped.
138	Olive	16,9,5	Yes	3	Moderate	Codominant trunks arise from 3'; wound 3'; dense canopy; epicormic growth.
139	Sweetgum	7	No	2	Low	Topped.
140	Sweetgum	8	No	3	Moderate	Multiple trunks arise from 7'; headed back cuts; wound on N branch from pruning cut; surface roots; girdled root S.
141	Olive	16,15	Yes	3	Moderate	Codominant trunks arise from 3'; stem removed at NE base; ivy encroachment; included bark on W stem.
142	Purple leaf plum	11,7,7,4	No	3	Moderate	Multiple trunks arise from 3'; bulge on S at 2'; epicormic growth; fused branching on E.
143	Olive	13,10	Yes	3	Moderate	Codominant trunks arise from base; fused stems at 3'; fused stem S canopy; growing in small parking lot planter; dense canopy; epicormic growth.
144	African fernpine	4,3,3,2	No	3	Moderate	Multiple trunks arise from base; 3' from building; dense canopy ; good color; hedged.
145	African fernpine	5,4	No	3	Moderate	Multiple trunks arise from base; 3' from building; dense canopy ; tip burn; hedged.
146	Olive	16	Yes	3	Low	Multiple trunks arise from 4; wound on N stem; fused stems N; stem removed at base SW with decay; epicormic growth; history of branch failure W.

Tree Assessment

Charaities Housing
 Santa Clara
 February 11, 2020



Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition 1=poor 5=excellent	Suitability for Preservation	Comments
147	Olive	16, 15	Yes	3	Low	Codominant trunks arise from 2'; decay at base on S ; wound on trunk S; history of branch failure E stem; wound on N stem; epicormic growth.
148	Olive	10,10,9	No	3	Moderate	Multiple trunks arise from base; epicormic growth; wound N stem.
149	Olive	17,14	Yes	3	Moderate	Multiple trunks arise from 3'; decay at base S; dense canopy; epicormic growth.
150	Olive	12,10,10,9	Yes	3	Low	Multiple trunks arise from 2' fused stems; dense canopy; topped on N near building; twig dieback.