ARBORIST REPORT-

Tree Inventory & Preliminary Impact Assessment

515 Soquel Avenue

APN: 010-01-229, 010-01-230, 010-01-221

Santa Cruz, CA

November 22, 2020

Prepared for:

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SUMMARY

This report provides the following information:

1. A summary of the health and structural condition of 37 trees.
2. A preliminary evaluation of anticipated construction impacts to the trees.
3. Recommendations for retention or removal of assessed trees based on their condition and anticipated construction impacts.

- The *Tree Assessment Chart*, Appendix A is the condensed reference guide to inform all tree management decisions for the trees evaluated.
- A new multi-unit housing development is proposed for three parcels.
- Thirty -seven trees within or near the parcel boundaries were inventoried.
- Six trees are suitable for incorporation in the proposed project.
- One “protected” tree is in poor condition and is not suitable for retention in the project.
- Ten “protected” trees are recommended for removal due to anticipated high construction impacts.
- A total of thirty-one trees are recommended for removal, eleven “protected” and twenty “not protected”.
- If removals are permitted, replacement trees will be required.
- This is a preliminary evaluation, once final plans are completed, tree protection specifications based on the final plans will be required.

Background

Plans will be submitted to the City of Santa Cruz, to develop the three parcels into a multi-unit housing complex. Mr. John Swift, Swift Consulting Services, Land Use Planning, has requested my services, to assess the condition of trees on the applicant’s property and the construction impacts that may affect them. Further, to provide a report with my findings and recommendations to meet City of Santa Cruz planning requirements.

Assignment

Provide an arborist report that includes an assessment of the trees within the project area. The assessment is to include the species, size (trunk diameter, height and canopy spread), condition (health and structure), and suitability for preservation ratings. Further, to review the preliminary development plans and assess the potential construction impacts.

To complete this assignment, the following services were performed:

- **Tree Resource Evaluation:** Tag with metal tags, inventory, evaluate and assign suitability for preservation ratings for subject trees.

Assignment continued:

- **Plan Review: Reviewed provided plans including:** Road Plan & Profile by Ifland Engineers, dated 4/30/2020, and Boundary Map, by Hanagan Land Surveying, dated, 1/15/2013.
- **Construction Impact Assessment:** Combine tree resource data with anticipated construction impacts, to provide recommendations for removal or retention of trees.
- **Mapping:** Tree locations were plotted onto: Boundary Map, Hanagan Land Surveying, dated, 1/15/2013, and a Tree Location Map was created.

Limits of the Assignment

The information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection on 11/17/2020.

The inspection is limited to visual examination of accessible items without climbing, dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the trees in questions may not arise in the future.

Purpose and use of the report

The report is intended to identify all the trees within the plan area that could be affected by a project. The report is to be used by the developer, their agents, the City of Santa Cruz, as a reference for existing tree conditions and to help satisfy the City of Santa Cruz planning requirements.

Resources

All information within this report is based on site plans as of the date of this report. Resources are as follows:

- Preliminary plan set by HBA Architecture, dated, 9/17/2019.
- Site Visit, Tree Inventory & Condition Evaluation at 515 Soquel Avenue, Santa Cruz, date 11/17/2020.
- City of Santa Cruz Municipal Code – Chapter 9.56 *Preservation of Heritage Trees* (applicable sections).

OBSERVATIONS

The project involves three parcels that border two streets, including Soquel Avenue and May Avenue. The property slopes down from Soquel Avenue and empties out at May Avenue (Image #1).

Image #1- 515 Soquel Avenue. Project boundary outlined in red. The property slopes down from Soquel Avenue to May Avenue. Lower third of property is covered with London plane and coast live oak (circled).

The commercial property currently has one main commercial building and one residential building. More than half of the property is parking lot area.

I inventoried 37 trees. The trees were tagged with numbered metal tags beginning with tag #31 and ending with #56. Five trees were not tagged since their trunks were not accessible, and six trees on adjacent properties were not tagged. Most trees were one of three species including coast live oak (*Quercus agrifolia*), London plane (*Platanus x hispanica*), and silver dollar gum (*Eucalyptus polyanthemos*).

The tree canopy cover is about 50-percent of the total area. Most trees are planted on the edges of the property. The lower third of the property leading to May Avenue is a driveway exit and has 100-percent canopy cover, composed of London plane and coast live oak (Image #2).

Image #2 – Trees T46 & T47 coast live oak and T48-T52, T54-T55, London plane. The oaks were in fair condition and the London plane were in fair or poor condition.

Most of the oaks inventoried were in fair condition. Oak tree T46, was the largest tree on the property (Image #3).

Image #3 – Tree T46 coast live oak. This oak grows in a 35' X15' planter.

The oak is growing at the top edge of a slope, in a 35 by 15-foot planting area and is in fair condition. The trees branching structure includes several large and well attached scaffold limbs.

A retaining wall supports some of the oak's planter bed between the project area, and the adjacent property. A small area of bare soil and rooting area extends down into the adjacent property.

The oak tree has well-developed structural growth, with normal foliar canopy density for the species. There was some deadwood and decay on the tree, including two 16”X16” partially callused pruning scars creating cavities with some decay visible (Image #4).

Image #4 – Tree T46, coast live oak. The two pruning scar cavities are at 20 feet above grade. They do not appear to be structurally significant, but examination by climbing or crane to better determine the percentage of decay is recommended.

Nine oaks inventoried were growing on the adjacent property at 555 Soquel Avenue, or were boundary trees that straddle the property line. These trees were mostly in fair condition and have canopies that overhang the project limits (Images #5& 6).

Image #5 – Trees T41 & T42, coast live oak (circled), with canopies overhanging the project limits. The trees were in fair condition. The property line is just beyond the parked car and home.

Image #6 – Trees T36, 62-D & 62-E. These oaks were in fair condition. Note overhanging canopies into project area.

One London plane tree was growing adjacent to the commercial building and is in fair condition (Image #7).

Image #7- Tree T43, London plane in fair condition, showing seasonal leaf drop.

Most London plane trees were growing on the edges of the driveway exit (Image #2).

They were in poor or fair condition. Many had partial canopy dieback or unbalanced canopies with a weight bias to the west (Image #8).

Image #8- Trees T48 &T50 in poor condition and T49 in fair condition, London plane. Tree T48 has tip and limb dieback over 30-percent of its canopy and T50 has a significant trunk bow to the west, and tip and limb dieback over 25-percent of its canopy.

Several of the plane trees are lifting the asphalt driveway by surface root diameter expansion, and many trip hazards have been created.

There are two sizes of silver dollar gum (eucalyptus), growing on the property. Half are mature trees (Image #9), and the second half are trees that have failed to develop, most likely due to a lack of rooting space, water and light. These undeveloped trees have trunk diameters of 6-inches or less.

Image #9 – Tree T31, silver dollar gum (circled). The tree is in fair condition. Surface rooting is causing sidewalk and parking lot pavement lifting.

The mature eucalyptus are in fair condition and the undeveloped eucalyptus are in poor condition.

The eucalyptus are planted in a narrow 2-foot wide planting strip, and many have extensive surface rooting causing asphalt lifting, and creating numerous trip hazards.

A row of maturing Italian cypress was planted against the commercial building on the west side (Image #10). The cypress are in good condition. It was not apparent if these trees are located on the subject property, or if they are part of the adjacent property at 501 Soquel Avenue.

Image #10 – Trees T57-T61, Italian cypress. The trees were in good condition.

A few other tree species were inventoried including one pine (*Pinus spp*.), in fair condition, one lemon (*Citrus limon*),in fair condition, and one plum (*Prunus spp*.) in poor condition.

DISCUSSION

Species List

TOTAL SUBJECT TREES: 37 Trees

Protected: 17

8	Coast Live Oak	(*Quercus agrifolia*)
6	London Plane	(*Plantanus x hispanica*)
2	Silver Dollar Gum	(*Eucalyptus polyanthemos)*
1	Pine	(*Pinus spp*.)

Not Protected: 20

7 different species. See Tree Assessment Chart, Appendix A for complete inventory.

Tree Evaluation and Recording Methods

Site evaluations were made on 11/17/2020. *The inventory included trees on two parcels within the project limits.* The health and structural **condition** of each tree was assessed and recorded. Based on the trees health and structural condition, each trees **suitability for preservation** was rated and recorded.

The recorded data is included in the *Tree Assessment Chart, Appendix A,* of this report. Tree numbers were plotted on the attached *Tree Location Map sheet, T1*. **To correlate the data in the Tree Assessment Chart to the tree's location on the site, refer to the Tree Location Map sheet T1 - Appendix C.**

Condition Rating - Protected Trees

A trees condition is determined by an assessing both the **health** and **structure**, then combining the two factors to reach a *condition rating*. If the health rating and the structure rating differ, the lower rating becomes the default *condition rating*. Tree condition is rated as poor, fair or good. The quantity of trees assigned for each category (good, fair or poor), is indicated below:

Tree Condition Rating

- Good - 1
- Fair - 14
- Poor - 2

Suitability for Preservation – Protected Trees

A trees suitability for preservation is determined based on its health, structure, age, species characteristics and longevity using a scale of good, fair or poor. The quantity of trees assigned to each category (good, fair or poor), is listed below.

Suitability Rating

- Good - 1
- Fair – 15
- Poor - 1

Trees Recommended for Removal Due to Poor Condition/Suitability for Preservation – Protected Trees

“Protected Trees”

- London Plane T52

Tree Protection Zone

The tree protection zone (TPZ), is a defined area within which certain activities are prohibited or restricted to minimize potential injury to designated trees during construction.

The size of the optimal TPZ can be determined by a formula based on 1) trunk diameter 2) species tolerance to construction impacts, and 3) tree age (Matheny, N. and Clark, J 1998). In some instances, tree drip line is used as the TPZ. Development constraints can also influence the final size of the tree protection zone.

Fencing is installed to delineate the (TPZ), and to protect tree roots, trunk, and scaffold branches from construction equipment. *The fenced protection area may be smaller than the optimal or designated TPZ area in some circumstances.* Tree protection may also involve the armoring of the tree trunk and/or scaffold limbs with barriers to prevent mechanical damage from construction equipment. *See Tree Protection Guidelines & Restrictions* – Appendix E.

Once the TPZ is delineated and fenced (prior to any site work, equipment and materials move in), construction activities are only to be permitted within the TPZ if allowed for and specified by the project arborist.

Where tree protection fencing cannot be used, or as an additional protection from heavy equipment, tree wrap may be used. Wooden slats at least one inch thick are to be bound securely, edge to edge, around the trunk. A single layer or more of orange plastic construction fencing is to be wrapped and secured around the outside of the wooden slats. Major scaffold limbs may require protection as determined by the City arborist or Project arborist. Straw wattle may also be used as a trunk wrap and secured with orange plastic fencing.

Data has been entered in the *Tree Assessment Chart – Appendix A,* which indicates the optimal Tree Protection Zone for each tree.

Critical Root Zone

Critical Root Zone (CRZ) is the area of soil around the trunk of a tree where roots are located that provide critical stability, uptake of water and nutrients required for a tree's survival. The CRZ is the minimum distance from the trunk that trenching that requires root cutting should occur and can be calculated as three to the five times the trunk Diameter at Breast Height (DBH). For example, if a tree is one foot in trunk diameter then the CRZ is three to five feet from the trunk location. We will often average this as four times the trunk diameter or 1ft. DBH = 4ft. CRZ (Smiley, E.T., Fraedrich, B. and Hendrickson, N. 2007).

Root Disturbance Distance

No one can estimate and predict with absolute certainty, what distance from a tree a soil disturbance such as excavation for construction should be, to ensure it will not significantly affect tree stability or health. Or to what degree, (low, moderate or high), a tree might be impacted. There are simply too many variables involved that we cannot see or anticipate. However, three times the D.B.H. (diameter at breast height), is a widely accepted minimum used in the industry for root disturbance, *on one side of the trunk*, and is supported by several research studies including (Smiley, Fraedich & Hendrickson 2002, Bartlett Tree Research Laboratories). This distance is often used during the design and planning phases of a project in order to estimate root loss due to construction activities. This distance is a guideline only and should be increased for trees with significant leans, decay or other structural problems.

The ISA, International Society of Arboriculture- Root Management (2017) publication recommends, “cutting roots at a distance greater than six times the trunk diameter (DBH) minimizes the likelihood of affecting both health and stability. This recommendation is given further direction by the companion publication, A.N.S.I. (*American National Standard*) A300 (Part 8)- 2013 Root Management, when roots are cut in a *non-selective* manner, i.e. in a straight line on one side of a tree. It says, if the cutting is “within six times the trunk diameter (DBH), mitigation shall be recommended”. Further, A.N.S.I. recommends the “minimum distance from the trunk for root cutting should be adjusted according to trunk diameter, species tolerance to root loss, tree age, health and site condition”.

In general, root cutting that occurs at a distance less than six times the diameter of a tree should be undertaken by hand digging and hand (or Sawzall), root pruning. These methods help mitigate root loss impacts.

Impacts to Subject Trees

Construction impact assessments are based on Preliminary plan set by HBA Architecture, dated, 9/17/2019. Excavation for the project is essentially to the edge of property lines. An underground garage covers more than half of the project area and excavation depths for the garage will be greater than 10 feet below existing grade.

Based on the preliminary design, only six trees will be feasible to incorporate into the project. Most trees will suffer root and canopy losses that exceed tolerances and they will need to be removed.

The six trees that can be retained, are six of nine, mature coast live oak located on the adjacent property, a few of which may be “boundary trees” located on both properties. Three of the nine oaks will require removal, since they will not be able to tolerate the amount of canopy loss required for clearance pruning from the new building.

Impacts to Subject Trees, Continued:

If the stone retaining wall the oak trees grow close to requires removal for the project, root loss impacts could also occur, and additional trees may need to be removed, or at a minimum tree preservation treatments would be required.

Twenty-one trees are either within the footprint of proposed project elements, or will suffer significant root and or canopy loss, will be highly impacted by the project, and will require removal. Ten are “protected” trees and eleven are “not protected”, trees. A list of these trees is included below.

Impact Level

Impact level rates the degree a tree may be impacted by construction activity and is primarily determined by how close the construction procedures occur to the tree. Construction impacts are rated as low, moderate, high. The quantity of trees assigned for each category (low, moderate, high), is indicated below:

Impact Rating - Protected Trees

- Low - 2
- Moderate – 4
- High - 11

Trees Recommended for Removal Due to Anticipated Construction Impacts

“Protected Trees”

2	T31,T34	Silver Dollar Gum
2	T46,T47	Coast Live Oak
5	T43,T48, T49, T54, T55	London Plane
1	T45	Pine
10	**Total**	

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“Not protected” trees

11 Total 5 different species.
(See Tree Assessment Chart, Appendix A for complete inventory of ”not protected” trees)

Trees That Could be Retained with Design Modification

Excavation for Tree T46, coast live oak,(48" trunk diameter), as shown in the preliminary site plan, will occur within 1.5 feet of the tree. This distance is below minimum root loss tolerances, and within the trees critical root zone. As a result, the tree will lose over 30% of its rooting area, including anchoring roots necessary to keep the tree upright.

In order to retain this tree, excavation for the garage driveway must occur a minimum of 7 feet from the trunk.

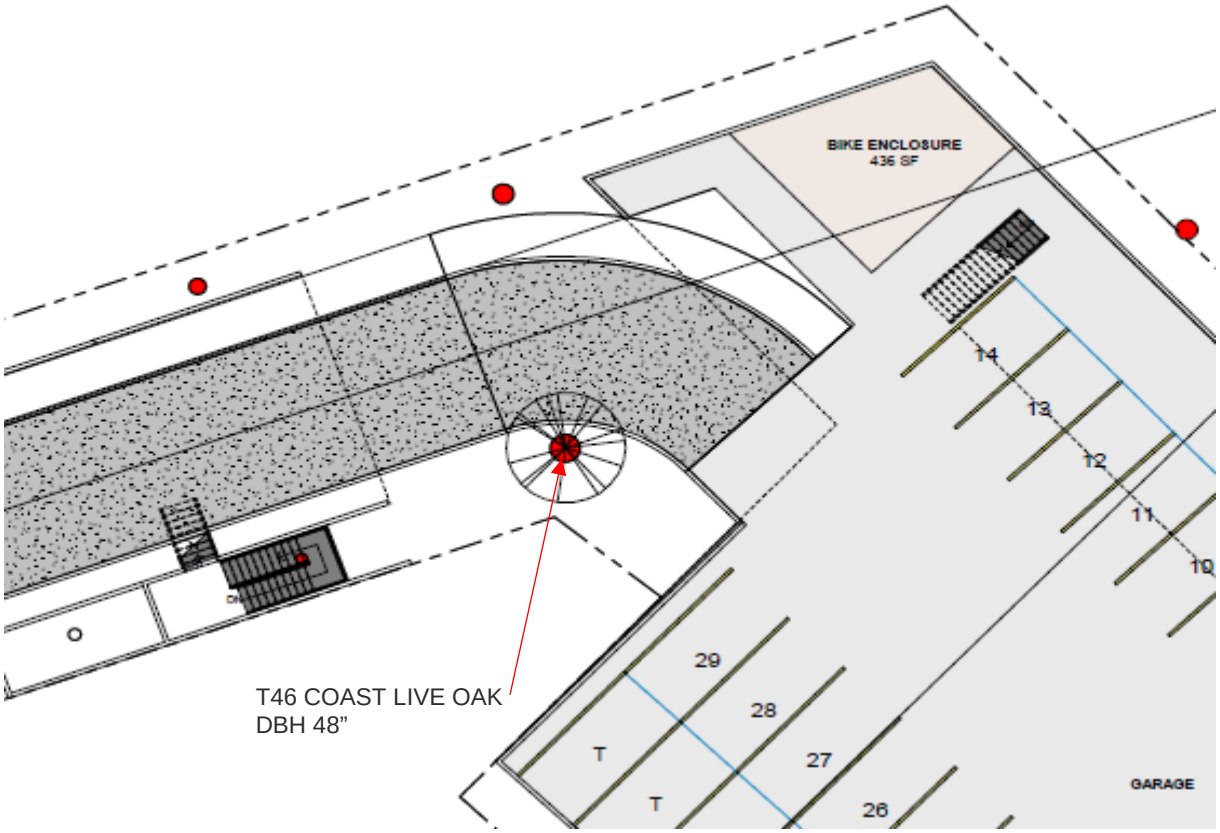

Image #11 – Tree T46, coast live oak. The proposed driveway edge is shown 1.5 feet from the tree trunk.

If the roots along the driveway edge can be bridged with a pier and beam foundation or other construction method, where cutting of roots is minimized, root loss impacts would be significantly reduced, the proposed driveway footprint could be maintained, and the tree could be retained.

If the tree is retained, targeted canopy clearance pruning from three adjacent units would also be required, along with pre-construction treatments.

Tree Replacement

This is a preliminary project submittal. The final number of trees could vary depending on the final design. At present, thirty-one trees are recommended for removal, twenty-one due to high construction impacts and ten due to poor condition. *Eleven of the trees recommended for removal are "protected" trees.*

Compensation for tree removal necessary to construct the project include:

- Preservation and protection of the retained trees during construction.
- Pre-construction treatments for specific trees.
- Tree replacement planting.

For each protected tree removed, the City of Santa Cruz requires one 15-gallon replacement tree. A total of eleven replacement trees will be required. If any of the replacement trees are planted as street trees, replacement requirements are specified below.

If tree replacement sites are limited within the design constraints of this project, applicants may elect to pay an in-lieu fee for offsite mitigation as described below.

Replacement trees should be planted away from structures and where they have enough room to develop. Do not install trees where overhead wire exist. The trees must receive supplemental irrigation equal to their establishment requirements for the first two years.

Replacement Trees for City of Santa Cruz Street Trees:

- For each tree removed, one replacement tree is required. In some situations, the city will provide 15-gallon trees of an approved street tree species.
- If street trees are replaced, an approved cast iron grate must be installed (Neenah Foundry #8710) with each tree.
- Applicants may elect to pay an in-lieu fee to the tree trust fund of $150 for off- site mitigation. (Contribution to the Tree Trust Fund are used to purchase street trees, trees for projects, etc.)
- If the $250.00 refundable bond is placed and the tree(s) are replanted, permittee must contact the City Urban Forester, 831-420-5246 after 3 months of establishment to the $250.00 bond returned. Once the permit is issued there is a 10-day appeal period as required by ordinance before the permit becomes effective.
- If no appeal is filed, the permit is valid for 45 days. Aggrieved parties wishing to appeal approval of a tree permit may submit a tree appeal application and $100 fee to the Parks and Recreation Department.
- If you choose to make a monetary donation to the City's Tree Trust Fund, your donation is used to purchase street trees to be planted in the City of Santa Cruz.

CONCLUSION

- The *Tree Assessment Chart*, Appendix A is the condensed reference guide to inform all tree management decisions for the trees evaluated.
- A new multi-unit housing development is proposed for three parcels.
- Thirty -seven trees within or near the parcel boundaries were inventoried.
- Six trees, all coast live oak species, are suitable for incorporation in the proposed project, including trees T41,T42, T62-A, T62-B,T62-E and T62-F.
- One “protected” tree, T52, London plane, is in poor condition and is not suitable for retention in the project.
- Ten “protected” trees are recommended for removal due to anticipated high construction impacts including trees T31,T34,Silver Dollar Gum, T46,T47, Coast Live Oak, T43,T48, T49, T54, T55, London Plane, and T45, Pine.
- A total of thirty-one trees are recommended for removal, eleven “protected” and twenty “not protected”.
- If removals are permitted, replacement trees will be required.
- This is a preliminary evaluation, once final plans are completed, tree protection specifications based on the final plans will be required.

RECOMMENDATIONS

1. Obtain all necessary permits prior to removing or significantly altering any trees on site.
2. Remove trees recommended for removal.
3. Have coast live oak tree T46 inspected by climbing or crane, to determine if the degree of decay in the upper trunk is structurally significant.
4. Determine if design modifications can be made to preserve coast live oak trees T46.
5. Have a topographic survey completed to determine which coast live oak are on the adjacent property and which are “boundary” trees located on both properties.
6. Tree protection specifications will be required once final plan sets are completed.

Respectfully submitted,

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Tree Assessment Chart - Appendix A

Suitability for Preservation Ratings:

Good: Trees in good health and structural condition with potential for longevity on the site

Fair: Trees in fair health and/or with structural defects that may be reduced with treatment procedures

Poor: Trees in poor health and/or with poor structure that cannot be effectively abated with treatment

Retention or Removal Code:

RT: Retain Tree
RI: Remove Due to Construction Impacts

I.M. Impacts Can Be Mitigated With Pre-Construction Treatments
R.C. Remove Due to Condition

Protected Tree City of Santa Cruz Any tree 14 inches or greater in diameter measured at 4.5 feet above grade. Street trees regardless of size.

Tree #	Species	Trunk Diameter @ 54 inches a.g.	Protected Tree	Crown Height & Diameter Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (in feet from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T31	silver dollar gum (*Eucalyptus polyanthemos*)	16",16", 16"	Yes	50'X35'	Fair	Fair	Fair	16'	High (Within grading limits)	R.I.	In a 8'X5' planter. Co-dominant trunks (3), with included bark. Roots lifting sidewalk and asphalt in parking lot, creating trip hazards.
T32	silver dollar gum	4"	No	15'X1'	Poor	Poor	Poor	N/A	High (Within grading limits)	R.C.,R.I.	Dead.
T33	silver dollar gum	4"	No	10'X4'	Poor	Fair	Poor	N/A	High (Within grading limits)	R.C., R.I.	Minimal live foliar canopy and branching structure. Suppressed growth by larger adjacent trees.
T34	silver dollar gum	16", 13", 11"	Yes	15'x20'	Fair	Fair-Poor	Fair	12'	High (Within grading limits)	R.I.	Co-dominant trunks with included bark at one foot above grade. Limb dieback up to 6" in diameter. Limb tear outs along trunk with deadwood and decay. Surface roots lifting asphalt creating multiple trip hazards.

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Tree Assessment Chart - Appendix A

Tree #	Species	Trunk Diameter @ 54 inches a.g.	Protected Tree	Crown Height & Diameter Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (in feet from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T35	silver dollar gum	5"	No	15'X5'	Poor	Poor	Poor	N/A	High (Within grading limits)	R.C.,R.I.	Nearly dead, minimal live foliar canopy.
T36	coast live oak (*Quercus agrifolia*)	12"	No	10'X10'	Fair	Poor	Poor	9'	High - (Canopy Loss, Trunk removal at project limit)	R.C., R.I.	Boundary tree at property line behind stone retaining wall. Stump sprout with horizontal growth of trunk along wall and extends 15' into parking area at 6-8' above grade.
T37	silver dollar gum	12"	No	40'X15'	Poor	Fair	Poor	9'	High (Within grading limits)	R.C., R.I.	Low vigor. Minimal new growth with thin canopy density. Dieback of limbs up to 1" in diameter.
T38	silver dollar gum	6"	No	20'X5'	Poor	Poor	Poor	N/A	High (Within grading limits)	R.C., R.I.	Dead terminal. Minimal branching structure and live foliar canopy growth.
T39	silver dollar gum	22"	No	55'X30'	Fair	Fair	Fair	16'	High (Within grading limits)	R.I.	In 4'X4' planter. Co-dominant trunks at 10' above grade. Deadwood in lower limbs. Roots lifting asphalt in parking lot.

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Tree Assessment Chart - Appendix A

Tree #	Species	Trunk Diameter @ 4.5'	Protected Tree	Crown Height & Diameter Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (in feet from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T40	silver dollar gum	12"	No	55'X10'	Fair-Poor	Fair	Fair	9'	High (Within grading limits)	R.I.	In 4'X4' planter. Deadwood in lower limbs. Minimal branching structure and live foliar canopy. Roots lifting asphalt in parking lot.
T41	coast live oak	18"	Yes	35'X25'	Fair	Fair	Fair	13'	Low-Moderate (Canopy loss, clearance pruning)	R.T.	Boundary tree at property line behind stone retaining wall. Canopy extends > 20' into project area. Needs removal of 25% of canopy for clearance from new building.
T42	coast live oak	36" at 3' above grade	Yes	45'X45'	Fair	Fair	Fair	24'	Moderate-High (Canopy loss, clearance pruning)	R.T.	Boundary tree at property line behind stone retaining wall. Co-dominant trunks at 6' above grade. Canopy extends 25' into project area. Needs removal of 55-65% of canopy for clearance from new building.
T43	London plane (*Platanus x hispanica*)	27" at 3' above grade	Yes	50'X40'	Fair	Fair	Fair	19'	High (Within grading limits)	R.I.	Co-dominant trunks at 6' above grade.
T44	species not identified	3"	No	10'X6'	Poor	Poor	Poor	N/A	High (Within grading limits)	R.C., R.I.	Dead
T45	pine (*Pinus spp* .)	18"	Yes	40'X20'	Fair	Fair	Fair	13'	High (Within grading limits)	R.I.	15 degree trunk lean. 4"X4" section of missing bark in lower trunk. Dieback of needle clusters over 10% of canopy. Top heavy branching structure, no branches in lower 3/4 of tree.

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Tree #	Species	Trunk Diameter @ 4.5'	Protected Tree	Crown Height & Diameter Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (in feet from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T46	coast live oak	48"	Yes	55'x55'	Fair	Fair	Fair	30'	High (Within grading limits)	R.I.	In 35' X15' planter. Two 16"X16" partially callused pruning scars with deadwood and decay at 20' above grade. Lowest limbs are 15' above grade. Has some recent pruning and removal of one 12" diameter lower scaffold. Exposed soil rooting area extends down slope into adjacent property.
T47	coast live oak	33"	Yes	55'X35'	Fair	Fair	Fair	23'	High (Within grading limits)	R.I.	In 15'X10' planter. Co-dominant trunks at 10' above grade. Cable between two trunks is recommended if tree is retained.
T48	London plane	16" at 3' above grade	Yes	35'X20'	Poor	Fair	Fair	12'	High (Within grading limits)	R.I.	Co-dominant trunks at 5' above grade. Dieback over 30% of canopy with limbs up to 2" in diameter.
T49	London plane	18" at 3' above grade	Yes	45'X25'	Fair	Fair	Fair	13'	High (Within grading limits)	R.I.	Co-dominant trunks at 5' above grade. Roots lifting asphalt in driveway creating multiple trip hazards.
T50	London plane	11"	No	40'X15'	Poor	Fair-Poor	Poor	8'	High (Within grading limits)	R.C., R.I.	Significant trunk bow to west. Foliar dieback over 25% of canopy.

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Tree Assessment Chart - Appendix A

Tree #	Species	Trunk Diameter @ 4.5'	Protected Tree	Crown Height & Diameter Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (in feet from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T51	London plane	11"	No	35'X25'	Fair	Fair-Poor	Fair	8'	High (Within grading limits)	R.I.	Unbalanced canopy with weight bias to west. Limbs growing into overhead power lines.
T52	London plane	16"	Yes	35'X25'	Poor	Fair-Poor	Poor	13'	High (Within grading limits)	R.C., R.I.	In significant decline. Limb dieback up to 4" in diameter over 60% of canopy. Unbalanced canopy with weight bias to north. Limbs growing into power lines.
T53	plum (*Prunus spp* .)	4",4",3"	No	15'X10'	Poor	Poor	Poor	N/A	High (Within grading limits)	R.C., R.I.	Minimal live canopy. Moderate bark beetle activity.
T54	London plane	16"	Yes	40'X20'	Fair-Poor	Fair-Poor	Fair	13'	High (Within grading limits)	R.I.	Co-dominant trunks at 6' above grade. Limb dieback over 25% of canopy. Unbalanced canopy with weight bias to west.
T55	London plane	26"	Yes	55'X40'	Good	Good	Good	20'	High (Within grading limits)	R.I.	In 4'X6' planter. Surface roots lifting asphalt driveway creating trip hazards.
T56	lemon (*Citrus limon*)	6"	No	10'X10'	Fair	Fair	Fair	8'	High (Within grading limits)	R.I.	In raised planter. Limb tear out at 3' above grade.

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11/22/2020

515 Soquel Avenue, Santa Cruz

Tree Assessment Chart - Appendix A

Tree #	Species	Trunk Diameter @ 4.5'	Protected Tree	Crown Height & Diameter Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (in feet from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T57 No Tag	Italian cypress (*Cupressus sempervirens*)	9"	No	20'X4'	Good	Good	Good	6'	High (Within grading limits)	R.I.	May be on adjacent property. In 3' wide planter. Grows one foot from building.
T58 No Tag	Italian cypress	9"	No	20'X4'	Good	Good	Good	6'	High (Within grading limits)	R.I.	May be on adjacent property. In 3' wide planter. Grows one foot from building.
T59 No Tag	Italian cypress	9"	No	20'X4'	Good	Good	Good	6'	High (Within grading limits)	R.I.	May be on adjacent property. In 3' wide planter. Grows one foot from building.
T60 No Tag	Italian cypress	9"	No	20'X4'	Good	Good	Good	6'	High (Within grading limits)	R.I.	May be on adjacent property. In 3' wide planter. Grows one foot from building.
T61 No Tag	Italian cypress	9"	No	20'X4'	Good	Good	Good	6'	High (Within grading limits)	R.I.	May be on adjacent property. In 3' wide planter. Grows one foot from building.
T62-A No Tag	coast live oak	9"	Yes	20'X10'	Poor	Fair	Fair	8'	Moderate (Canopy loss, clearance pruning)	R.T.	On adjacent property. Canopy overhangs project limits by 6'.

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Tree Assessment Chart - Appendix A

Tree #	Species	Trunk Diameter @ 4.5'	Crown Height & Diameter Spread	Crown Height & Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (in feet from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T62-B No Tag	coast live oak	16"	Yes	30'X30'	Fair	Fair	Fair	13'	Moderate (Canopy loss, clearance pruning)	R.T.	On adjacent property. Canopy overhangs project limits by 10'.
T62-C No Tag	coast live oak	6"	No	6'X6'	Fair	Poor	Fair	6'	High (Canopy loss, clearance pruning)	R.I.	On adjacent property. Canopy overhangs project limits by 12'. 25 degree trunk lean and unbalanced canopy with weight bias to west. Cannot be successfully clearance pruned without significant damage to tree.
T62-D No Tag	coast live oak	9"	No	20'X15'	Fair	Fair	Fair	8'	High (Canopy loss, clearance pruning)	R.I.	On adjacent property. Canopy overhangs project limits by 12'. 25 degree trunk lean and unbalanced canopy with weight bias to west. Cannot be successfully clearance pruned without significant damage to tree.
T62-E No Tag	coast live oak	20"	Yes	35'X25'	Fair	Fair	Fair	13'	Low (Root loss)	R.T.	On adjacent property. 7' from stone retaining wall.
T62-F No Tag	coast live oak	24"	Yes	45'X35'	Fair	Fair	Fair	15'	Moderate-High (Canopy loss, clearance pruning)	R.T.	On adjacent property. Overhangs project limits by 25'. Needs removal of 55-65% of canopy for clearance from new building.

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APPENDIX B – CRITERIA FOR TREE ASSESSMENT CHART

Following is an explanation of the data used in the tree evaluations. The data is incorporated in the *Tree Assessment Chart, Appendix A.*

Trunk Diameter and Number of Trunks:

Trunk diameter as measured at 4.5 feet above grade. The number of trunks refers to a single or multiple trunked tree. Multiple trunks are measured at 4.5 feet above grade.

Health Ratings:

Good: A healthy, vigorous tree, reasonably free of signs and symptoms of disease

Fair: Moderate vigor, moderate twig and small branch dieback, crown may be thinning and leaf color may be poor

Poor: Tree in severe decline, dieback of scaffold branches and/or trunk, most of foliage from epicormics

Structure Ratings:

Good: No significant structural defects. Growth habit and form typical of the species

Fair: Moderate structural defects that might be mitigated with regular care

Poor: Extensive structural defects that cannot be abated.

Suitability for Preservation Ratings:

Rating factors:

Tree Health: Healthy vigorous trees are more tolerant of construction impacts such as root loss, grading and soil compaction, then are less vigorous specimens.

Structural integrity: Preserved trees should be structurally sound and absent of defects or have defects that can be effectively reduced, especially near structures or high use areas.

Tree Age: Over mature trees have a reduced ability to tolerate construction impacts, generate new tissue and adjust to an altered environment. Young to maturing specimens are better able to respond to change.

Species response: There is a wide variation in the tolerance of individual tree species to construction impacts.

Rating Scale:

Good: Trees in good health and structural condition with potential for longevity on the site

Fair: Trees in fair health and/or with structural defects that may be reduced with treatment procedures.

Poor: Trees in poor health and/or with poor structure that cannot be effectively abated with treatment. Trees can be expected to decline or fail regardless of construction impacts or management . The species or individual may possess characteristics that are incompatible or undesirable in landscape settings or unsuited for the intended use of the site.

Construction Impacts:

Rating Scale:

High: Development elements proposed that are located within the Tree Protection Zone that would severely impact the health and /or stability of the tree. The tree impacts cannot be mitigated without design changes. The tree may be located within the building footprint.

Moderate: Development elements proposed that are located within the Tree Protection Zone that will impact the health and/or stability of the tree and can be mitigated with tree protection treatments.

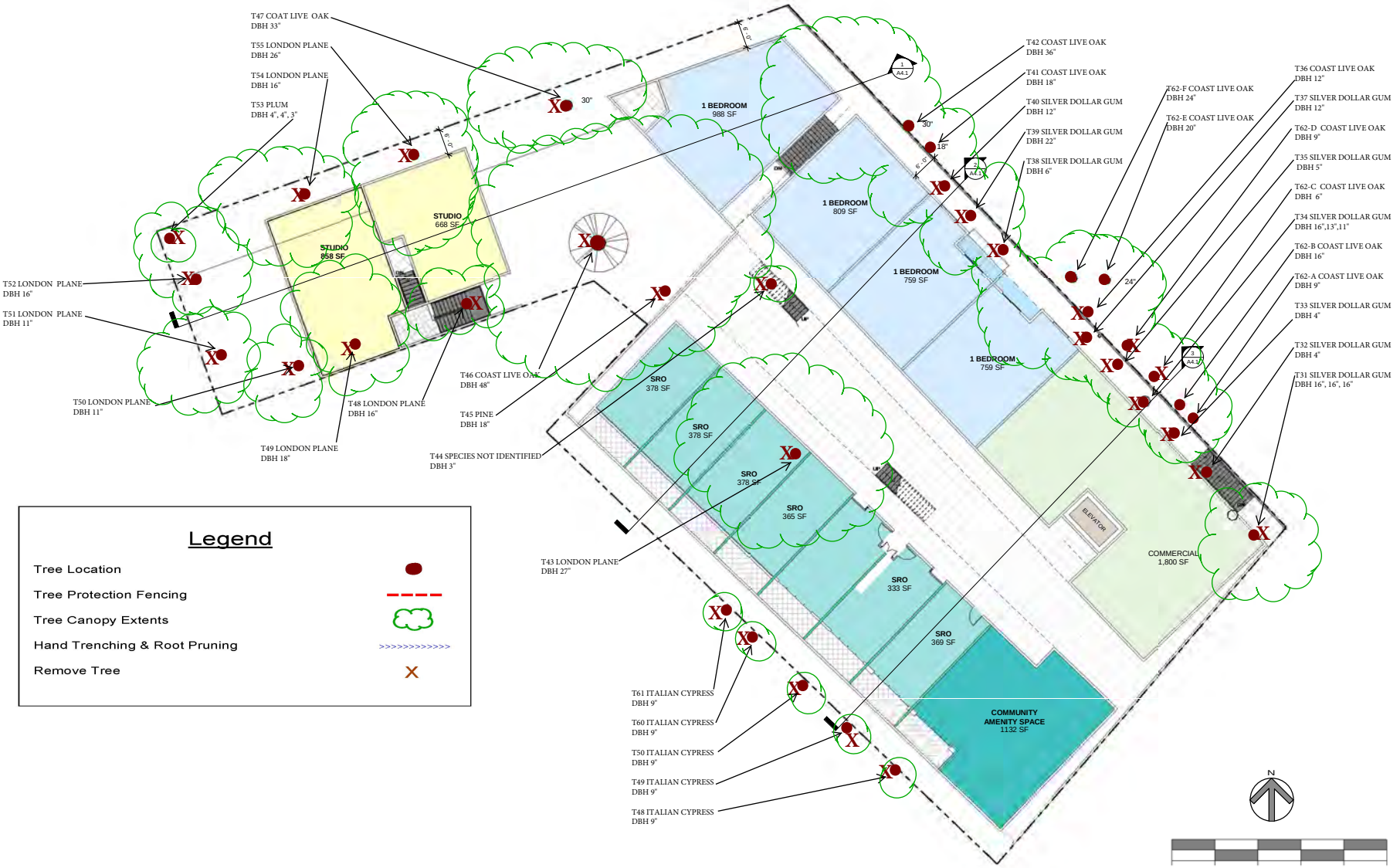
Low: Development elements proposed that are located within or near the Tree Protection Zone that will have a minor impact on the health of the tree and can be mitigated with tree protection treatments.

None: Development elements will have no impact on the health and stability of the Tree.

Tree Protection Zone (TPZ):

Defined area within which certain activities are prohibited or restricted to prevent or minimize potential injury to designated trees, particularly during construction or development.

Tree Location Map
515 Soquel Avenue, Santa Cruz



Legend

- Tree Location
- Tree Protection Fencing
- Tree Canopy Extents
- Hand Trenching & Root Pruning
- Remove Tree

1" = 20"

1st Floor 1" = 10'-0"

Base map provided by: HBA Architecture & Planning, Santa Barbara, CA

K.F.
11/22/2020

APN:
010-01-229,
010-01-230,
010-01-221

Sheet T1
of 1 sheet

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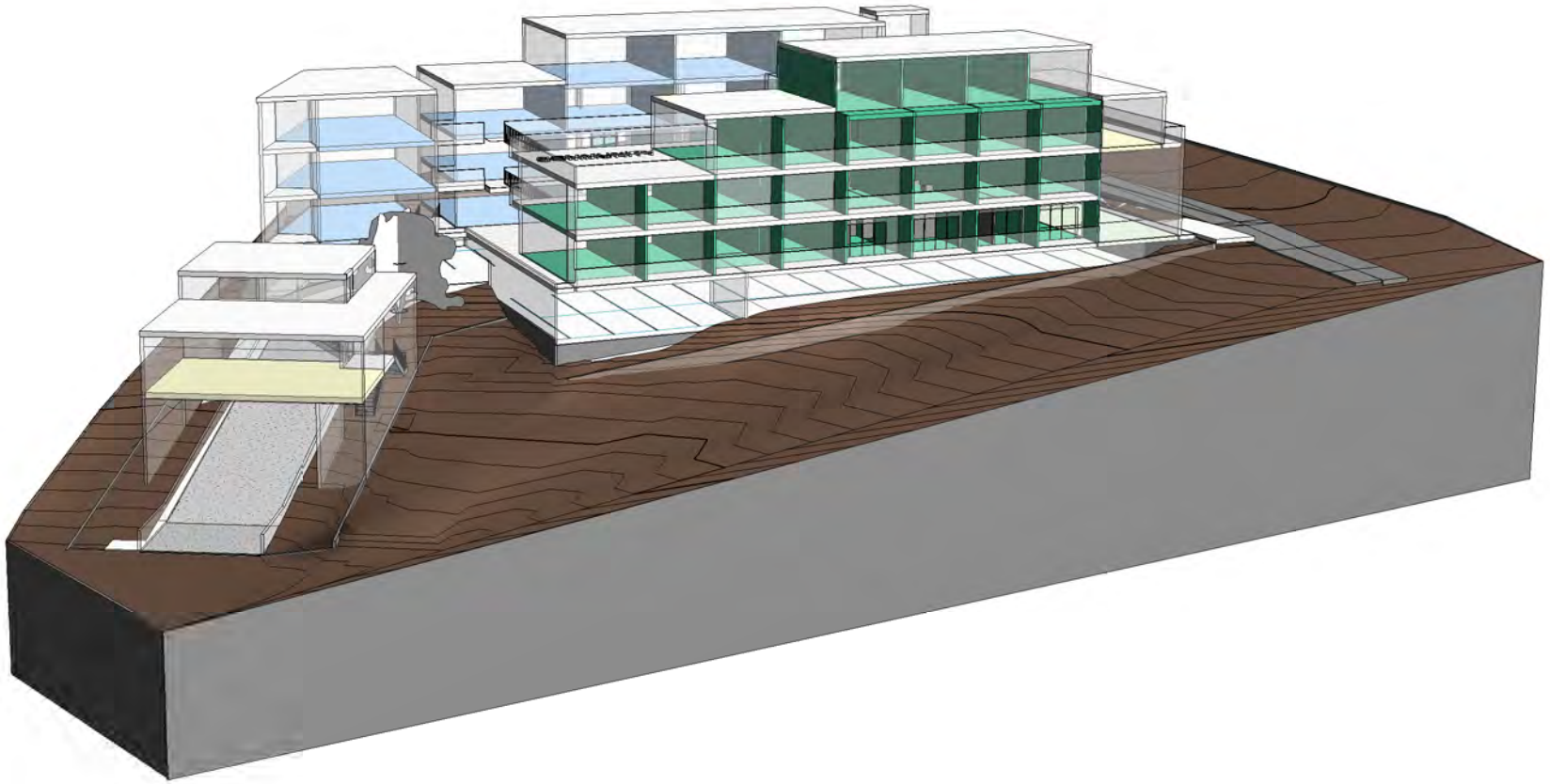

3D View 1 | 1

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SHEET CONTENTS

COVER SHEET

PROJECT NO: 9887

SHEET

A0.1

Exhibit Roof Plan 1" = 20'-0" | 1

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SHEET CONTENTS
ROOF PLAN

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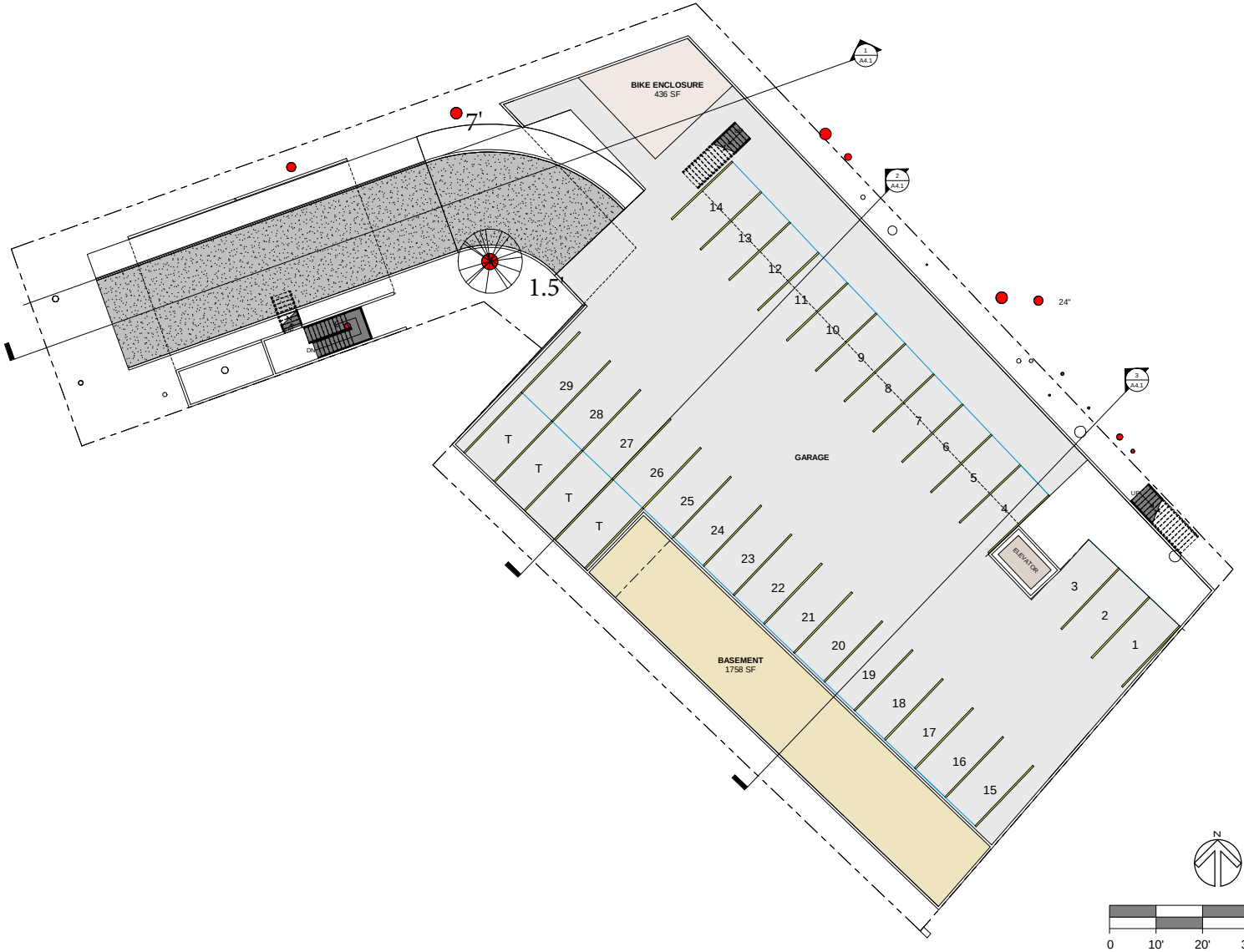
SHEET
A0.2



0 Basement 1" = 10'-0" | 1

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SHEET CONTENTS
Basement

PROJECT NO: 9887

SHEET
A2.0

STATISTICS

SRO BUILDING

	RESIDENCIAL	CIRC. DECKS PATIOS	AMENITIES
1	2,730 SF	2,662 SF	1,132 SF
2	3,118 SF	1,272 SF	
3	2,907 SF	2,247 SF	
4	1,566 SF	664 SF	
	10,321 SF	6,845 SF	1,132 SF

BLDG TOTAL = 18,292 SF

26 SRO UNITS

BASE ZONE:

	RESIDENCIAL	CIRC. DECKS PATIOS	COMMERCIAL
1	2,357 SF	1,759 SF	1,800 SF
2	3,182 SF	822 SF	453 SF
3	4,012 SF	1,152 SF	
4	2,458 SF	146 SF	
	12,009 SF	3,879 SF	2,253 SF

BLDG TOTAL = 18,141 SF

8 ONE BEDROOM
1 TWO BEDROOM
3 THREE BEDROOM

RL ZONE

	RESIDENCIAL	CIRC. DECKS PATIOS
1	2,250 SF	488 SF
2	988 SF	107 SF
3	988 SF	107 SF
	4,496 SF	702 SF

BLDG TOTAL = 5,198 SF

5 ONE BEDROOM

TOTAL RESIDENCIAL	26,826 SF
TOTAL AMENITIES	1,132 SF
TOTAL COMMERICAL	2,253 SF
TOTAL CIRCULATION	11,426 SF
TOTAL BUILDING AREA	41,637 SF

PARKING SUMMARY:

26 SRO @.5/unit	13	spaces
8- 1br @.5/br	04	spaces
1- 2br @.5/br	01	spaces
3- 3br @.5/br	4.5	spaces
Commercial @1 /300	06	spaces
Total required	28.5	spaces
Total provided	29	spaces

w/ 4 additional provided in tandem for 2 and 3 bedroom units

1" = 20"

1st Floor 1" = 10'-0" | 1

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SHEET CONTENTS
Floor Plan

PROJECT NO: 9887

SHEET
A2.1

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Glossary of Terms

Basal rot: decay of the lower trunk, trunk flare, or buttress roots.

Canker: Localized diseased area on stems, roots and branches. Often sunken and discolored.

Critical Root Zone (CRZ): Area of soil around a tree where a minimum number of roots considered critical to the structural stability or health of the tree are located. CRZ determination is sometimes based on the drip line or a multiple of the DBH, but because root growth can be asymmetric due to site conditions, on-site investigation may be required.

Codominant branches/stems: Forked branches (or trunks), nearly the same size in diameter, arising from a common junction and lacking a normal branch union, may have included bark.

Crown: Upper part of a tree, measured from the lowest branch, including all branches and foliage.

Defect: An imperfection, weakness, or lack of something necessary. In trees defects are injuries, growth patterns, decay, or other conditions that reduce the tree's structural strength.

Diameter at breast height (DBH): Measurement of trunk diameter at 4.5 feet above grade.

Frass: Fecal material and/or wood shavings produced by insects.

Included Bark Attachments (crotches): Bark that becomes imbedded in a crotch (union) between branch and trunk or between codominant stems. Lacks axillary wood and causes a weak attachment.

Live Crown Ratio (LCR): Ratio of the height of the crown containing live foliage to overall height of the tree.

Scaffold branches: Permanent or structural branches that form the scaffold architecture or structure of a tree.

Suppressed: Trees that have been overtopped and occupy an understory position within a group or grove of trees. Suppressed trees often have poor structure.

Tree Protection Zones (TPZ): Defined area within which certain activities are prohibited of restricted to prevent or minimize potential injury to designated trees, especially during construction or development.

Trunk flare: Transition zone from trunk to roots where the trunk expands into the buttress or structural roots.

This Glossary of Terms was adapted from the *Glossary of Arboricultural Terms* (ISA, 2015)

Appendix G- TREE PROTECTION GUIDELINES AND RESTRICTIONS

Protecting Trees During Construction:

1) Before the start of site work, equipment or materials move in, clearing, excavation, construction, or other work on the site, every tree to be retained shall be securely fenced- off as delineated in approved plans. Such fences shall remain continuously in place for the duration of the work undertaken in connection with the development.

2) If the proposed development, including any site work, will encroach upon the tree protection zone, special measures shall be utilized, as approved by the project arborist, to allow the roots to obtain necessary oxygen, water, and nutrients.

3) Underground trenching shall avoid the major support and absorbing tree roots of protected trees. If avoidance is impractical, hand excavation undertaken under the supervision of the project arborist may be required. Trenches shall be consolidated to service as many units as possible. Boring/tunneling under roots should be considered as an alternative to trenching.

4) Concrete or asphalt paving shall not be placed over the root zones of protected trees, unless otherwise permitted by the project arborist.

5) Artificial irrigation shall not occur within the root zone of native oaks, unless deemed appropriate on a temporary basis by the project arborist to improve tree vigor or mitigate root loss.

6) Compaction of the soil within the tree protection zone shall be avoided.

7) Any excavation, cutting, or filling of the existing ground surface within the tree protection zone shall be minimized and subject to such conditions as the project arborist may impose. Retaining walls shall likewise be designed, sited, and constructed to minimize their impact on protected trees.

8) Burning or use of equipment with an open flame near or within the tree protection zone shall be avoided. All brush, earth, and other debris shall be removed in a manner that prevents injury to the tree.

9) Oil, gas, chemicals, paints, cement, stucco or other substances that may be harmful to trees shall not be stored or dumped within the tree protection zone of any protected tree, or at any other location on the site from which such substances might enter the tree protection zone of a protected tree.

10) Construction materials shall not be stored within the tree protection zone of a protected tree.

Project Arborist Duties and Inspection Schedule:

The project arborist is the person(s) responsible for carrying out technical tree inspections, assessment of tree health, structure and risk, arborist report preparation, consultation with designers and municipal planners, specifying tree protection measures, monitoring, progress reports and final inspection.
A qualified project arborist (or firm) should be designated and assigned to facilitate and insure tree preservation practices. He/she/they should perform the following inspections:

Inspection of site: Prior to equipment and materials move in, site work, demolition, landscape construction and tree removal: The project arborist will meet with the general contractor, architect / engineer, and owner or their representative to review tree preservation measures, designate tree removals, delineate the location of tree protection fencing, specify equipment access routes and materials storage areas, review the existing condition of trees and provide any necessary recommendations.

Inspection of site: During excavation or any activities that could affect trees: Inspect site during any activity within the Tree Protection Zones of preserved trees and any recommendations implemented. Assess any changes in the health of trees since last inspection.

Final Inspection of Site: Inspection of site following completion of construction. Inspect for tree health and make any necessary recommendations.

Kurt Fouts shall be the Project Arborist for this project. All scheduled inspections shall include a brief Tree Monitoring report, documenting activities and provided to the City Arborist.

Tree Protection Fencing

Tree Protection fencing shall be installed prior to the arrival of construction equipment or materials. Fence shall be comprised of six -foot chain link fence mounted on eight - foot tall, 1 and 7/8-inch diameter galvanized posts, driven 24 inches into the ground and spaced on a minimum of 10-foot centers. Once established, the fence must remain undisturbed and be maintained throughout the construction process until final inspection.

A final inspection by the City Arborist at the end of the project will be required prior to removing any tree protection fencing.

Tree Protection Signs

All sections of fencing should be clearly marked with signs stating that all areas within the fencing are Tree Protection Zones and that disturbance is prohibited.

Monitoring

Any trenching, construction or demolition that is expected to damage or encounter tree roots should be monitored by the project arborist or a qualified ISA Certified Arborist and should be documented.

The site should be evaluated by the project arborist or a qualified ISA Certified Arborist after construction is complete, and any necessary remedial work that needs to be performed should be noted.

Root Pruning

Root pruning shall be supervised by the project arborist. When roots over two inches in diameter are encountered they should be pruned by hand with loppers, handsaw, reciprocating saw, or chain saw rather than left crushed or torn. Roots should be cut beyond sinker roots or outside root branch junctions and be supervised by the project arborist. When completed, exposed roots should be kept moist with burlap or backfilled within one hour.

Tree Work Standards and Qualifications

All tree work, removal, pruning, planting, shall be performed using industry standards of workmanship as established in the Best Management Practices of the International Society of Arboriculture (ISA) and the American National Standards Institute series, *Safety Requirements in Arboriculture Operations* ANSI Z133-2017,

Contractor licensing and insurance coverage shall be verified.

During tree removal and clearance, sections of the Tree Protection Fencing may need to be temporarily dismantled to complete removal and pruning specifications. After each section is completed, the fencing is to be re-installed.

Trees to be removed shall be cut into smaller manageable pieces consistent with safe arboricultural practices, and carefully removed so as not to damage any surrounding trees or structures. The trees shall be cut down as close to grade as possible. Tree removal is to be performed by a qualified contractor with valid City Business/ State Licenses and General Liability and Workman's Compensation insurance.

Development Site Tree Health Care Measures

RECOMMENDED TO PROVIDE OPTIMUM GROWING CONDITIONS, PHYSIOLOGICAL INVIGORATION AND STAMINA, FOR PROTECTION AND RECOVERY FROM CONSTRUCTION IMPACT.

Establish and maintain TPZ fencing, trunk and scaffold limb barriers for protection from mechanical damage, and other tree protection requirements as specified in the arborist report.

Project arborist to specify site-specific soil surface coverings (wood chip mulch or other) for prevention of soil compaction and loss of root aeration capacity.

Soil, water and drainage management is to follow the ISA BMP for "Managing Trees During Construction" and the ANSI Standard A300(Part 2)- 2011 Soil Management (a. Modification, b. 'Fertilization, c. Drainage.)

Fertilizer / soil amendment product(s) amounts and method of application to be specified by certified arborist.

City of Santa Cruz

9.56.040 HERITAGE TREE AND HERITAGE SHRUB DESIGNATION.

Any tree, grove of trees, shrub or group of shrubs, growing on public or private property within the city limits of the city of Santa Cruz which meet(s) the following criteria shall have the “heritage” designation:

(a) Any tree which has a trunk with a circumference of forty-four inches (approximately fourteen inches in diameter or more), measured at fifty-four inches above existing grade;

(b) Any tree, grove of trees, shrub or group of shrubs which have historical significance, including but not limited to those which were/are:

(1) Planted as a commemorative;

(2) Planted during a particularly significant historical era; or

(3) Marking the spot of an historical event.

(c) Any tree, grove of trees, shrub or group of shrubs which have horticultural significance, including but not limited to those which are:

(1) Unusually beautiful or distinctive;

(2) Old (determined by comparing the age of the tree or shrub in question with other trees or shrubs of its species within the city);

(3) Distinctive specimen in size or structure for its species (determined by comparing the tree or shrub to average trees and shrubs of its species within the city);

(4) A rare or unusual species for the Santa Cruz area (to be determined by the number of similar trees of the same species within the city);

(5) Providing a valuable habitat; or

(6) Identified by the city council as having significant arboricultural value to the citizens of the city.

ASSUMPTIONS AND LIMITING CONDITIONS

1. Any legal description provided by the appraiser/consultant is assumed to be correct. No responsibility is assumed for matters legal in character nor is any opinion rendered as the quality of any title.
2. The appraiser/consultant can neither guarantee nor be responsible for accuracy of information provided by others.
3. The appraiser/consultant shall not be required to give testimony or to attend court by reason of this appraisal unless subsequent written arrangements are made, including payment of an additional fee for services.
4. Loss or removal of any part of this report invalidates the entire appraisal/evaluation.
5. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person(s) to whom it is addressed without written consent of this appraiser/consultant.
6. This report and the values expressed herein represent the opinion of the appraiser/consultant, and the appraiser/consultant's fee is in no way contingent upon the reporting of a specified value nor upon any finding to be reported.
7. Sketches. Diagrams. Graphs. Photos. Etc., in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering reports or surveys.
8. This report has been made in conformity with acceptable appraisal/evaluation/diagnostic reporting techniques and procedures, as recommended by the International Society of Arboriculture.
9. When applying any pesticide, fungicide, or herbicide, always follow label instructions.
10. No tree described in this report was climbed, unless otherwise stated. We cannot take responsibility for any defects which could only have been discovered by climbing. A full root collar inspection, consisting of excavating around the tree to uncover the root collar and major buttress roots, was not performed, unless otherwise stated. We cannot take responsibility for any root defects which could only have been discovered by such an inspection.

CONSULTING ARBORIST DISCLOSURE STATEMENT

Arborists are tree specialists who use their education. Knowledge, training, and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce risk of living near trees, Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like medicine, cannot be guaranteed.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.

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MEMBER
INTERNATIONAL SOCIETY OF ARBORICULTURE
ISA
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