



Todd Prager & Associates LLC

MEMORANDUM

DATE: July 21, 2022
TO: Patrick/Dave, LLC
FROM: Todd Prager, RCA #597, ISA Board Certified Master Arborist
RE: Tree Plan for the Forest Lawn Partition

Summary

After adjustments to the proposed site design and infrastructure improvements, 34 trees are proposed to be retained and 7 trees are proposed to be removed at the Forest Lawn Partition in Cannon Beach. The current proposed tree removal has been reduced from 11 trees to 7 trees since the May 26, 2022 partition application submittal. The 34 trees to be retained with site design and infrastructure improvements will be protected according to the recommendations in this report.

Background

Patrick/Dave, LLC is proposing a three-lot partition and construction of infrastructure improvements at the vacant property located south of the intersection of Forest Lawn Road and South Hemlock Street in Cannon Beach, Oregon. Wetlands occupy much of the northern portion of the site with the buildable areas clustered towards the southern end. Access to lots 1 and 3 is proposed from South Hemlock Street and access to lot 2 is proposed from Forest Lawn Road. The proposed partition plan is provided in Attachment 1.

Sitka spruce (*Picea sitchensis*) is the dominant tree species at the site with scattered red alder (*Alnus rubra*) along with a western hemlock (*Tsuga heterophylla*) and crabapple (*Malus sp.*). Small diameter Hooker's willow (*Salix hookeriana*) occupy much of the wetland, but their diameter's were smaller than required to be individually inventoried.

The partition application dated May 26, 2022 anticipated the removal of 11 trees with future development of the site and lots.

The assignment requested of my firm for this project was to:

- Visit the property to review the site and trees;
- Coordinate with the project design team to identify opportunities for additional tree preservation;
- Provide my recommendations for tree preservation and removal based on the site constraints; and
- Provide tree protection recommendations for the construction of site and infrastructure improvements.

Tree and Site Assessment

On July 17, 2022, I visited the site and reviewed the trees. The purpose of my site visit was to verify the tree assessment dated December 28, 2021 by Arbor Care Tree Specialists, Inc. in Attachment 2. During my visit I also reviewed the site to determine if there were opportunities for additional tree preservation. My scope of work did not include a re-inventory of the trees at the site since that work was already completed by another arborist.

The tree assessment data in Attachment 1 was generally accurate and relevant for this stage of the project. The following changes and additions to the inventory based on my site visit are summarized as follows:

- **Tree 12**, a decayed red alder growing over a culvert, was removed by the City of Cannon Beach based on background I received.
- **Tree 15**, a 60-inch diameter (DBH) Sitka spruce, had a thinning crown compared with other trees at the site.
- **Tree 16**, a 50-inch Sitka spruce on a neighboring property, had a thinning crown compared with other trees at the site and a sweep in its lower trunk towards the northeast.
- **Tree 20**, a 30-inch DBH western hemlock, leaned away from the site and was separated from South Hemlock Street by larger Sitka Spruce that were adjacent to it.
- **Tree 21.1** was added to the site plan in its approximate location by my firm. It was a 36-inch DBH Sitka spruce in good health condition and fair structural condition with codominant stems at approximately 50 feet above ground. Its crown was moderately one sided due to competition with adjacent trees.
- **Tree 34** was a 35-inch DBH Sitka spruce with an approximately 15 percent live crown ratio. Live crown ratio is the ratio of the height of the tree's live foliage to the total height of the tree.
- **Tree 36** was a 36-inch DBH Sitka spruce with a sweep at its lower trunk towards South Hemlock Street.
- **Tree 37b** presently had a relatively low density of *Porodaedalea pini* conks.

With the removal of tree 12 from the inventory and addition of tree 21.1, the total inventoried tree count at the site remains at 41 trees.

Tree Preservation and Removal

Following my site visit, I coordinated with the project team to review and adjust the proposed plans with the goal of preserving additional trees. The following plan adjustments were made in coordination with the project team:

- **Utilities and Access:** The proposed utility and access easement alignment was adjusted to reduce disturbance to the root zones of trees 18 and 20;
- **Lot 1:** The lot 1 building site and vehicle turnaround was adjusted to reduce disturbance to the root zones of trees 16 and 18;
- **Lot 3:** The lot 3 building site was adjusted to reduce disturbance to the root zone of tree 25; and

- **Wetland Trees:** Trees 20 and 37b will be retained and monitored by the owners so that no tree removal will occur within the wetland.

The May 26, 2022 partition application proposed the removal of 11 trees. Based on proposed site plan changes, the current proposal is to remove 7 trees. Table 1 below is a summary of the current status of the 11 trees previously proposed for removal. Trees with changes in status are bolded in Table 1.

Table 1: Current Status of 11 Trees Previously Proposed for Removal

Tree #	Type	DBH	Area	5/22/2022 Proposal	Current Proposal	Comments
12	red alder	11	wetland	remove	n/a	Removed by city
15	Sitka spruce	60	upland	remove	remove	This tree had a thinning crown and will be impacted by construction of the access drive and utilities from South Hemlock
17	Sitka spruce	50	upland	remove	remove	This tree had a poor live crown ratio, lean, heaving root plate, and will be impacted by construction of the access drive and utilities from South Hemlock
18	Sitka spruce	29	upland	remove	retain	This tree can be retained by repositioning of the access drive and utilities from South Hemlock and relocating the lot 1 vehicle turnaround
19	Sitka spruce	36	upland	remove	remove	This tree conflicts with construction of the access drive and utilities from South Hemlock
20	western hemlock	30	wetland	remove	retain	This tree leaned away from the building site and was separated from South Hemlock Street by larger Sitka Spruce that were adjacent to it. The adjacent trees offered protection to the roadway. It may be retained and monitored at this time.
23	Sitka spruce	32	upland	remove	remove	This tree conflicts with the access drive, utilities, and building site for lot 3.
34	Sitka spruce	35	upland	remove	remove	This tree conflicts with the building site for lot 3.
35	Sitka spruce	35	upland	remove	remove	This tree conflicts with the building site for lot 3 and is infected with <i>Fomitopsis pinicola</i> .
36	Sitka spruce	36	upland	remove	remove	This tree conflicts with the building site for lot 3.
37b	Sitka spruce	32	wetland	remove	retain	This tree was in the wetland and had a relatively low density of <i>Porodaedalea pini</i> conks. It may be retained and monitored at this time.

Tree Protection Recommendations

The trees to be retained will require protection during construction. This section of the report includes my preliminary tree protection recommendations for the construction of site and infrastructure improvements.

- *Tree Protection Fencing:* Tree protection fencing shall be installed in the locations shown in Attachment 1 prior to construction of site and infrastructure improvements. If work is required in the tree protection zones, the project arborist shall be consulted to oversee the work.
- *Directional Felling:* Fell the trees to be removed away from the trees to be retained so they do not contact or otherwise damage the trunks or branches of the trees to be retained. No vehicles or heavy equipment shall be permitted within the tree protection zones during tree removal operations.
- *Stump Removal:* The stump of trees 17, 19, 23, 34, 35, and 36 to be removed shall have their structural roots cut prior to removal to protect the root systems of the adjacent trees to be retained.
- *Underground utilities:* Excavation for underground utilities shall be centered within the access/utility easement to gain maximum distance from both trees 18 and 20. If roots over 2-inches in diameter are encountered during excavation, work should be paused and excavation overseen by the project arborist so that roots may be retained and tunneled under where possible.
- *Access, driveways, and turnaround construction:* The access, driveway, and turnarounds adjacent to trees 16, 18, 20, 24, and 25 shall be constructed of clean crushed rock (with no fines) over geotextile fabric that is permeable to air and water. The surface litter layer shall be carefully removed under arborist supervision prior to fabric and rock placement to minimize damage and disturbance to any surface roots of trees to be retained. No excavation beyond the native soil surface is permitted. At least four inches of crushed rock over geotextile fabric shall be placed over exposed surface roots to protect them from damage.
- *Building Foundations within Tree Protection Zones:* If any building foundations are to be constructed within the tree protection zones shown in Attachment 1, they will need to be designed to protect structural roots that may be located within their footprints. This may involve pneumatic excavation to locate structural roots greater than 2-inches in diameter and bridging the foundations over the roots. A pier foundation is the least intrusive foundation type (Figure 1) and may be required to minimize root impacts. Any pneumatic excavation or foundation construction within the tree protection zones will need to occur under the onsite supervision of the project arborist.

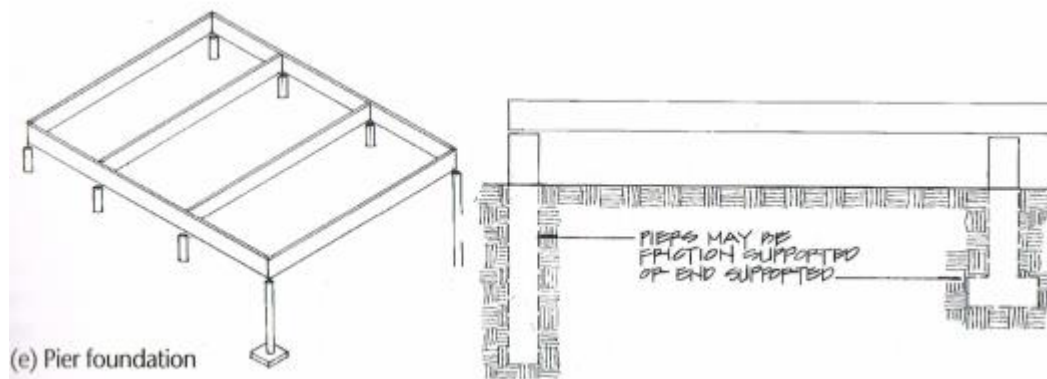


Figure 1: Pier Foundation Example¹

- *Compaction Management:* If needed for construction access, a 12-inch layer of wood chips over geotextile fabric shall be placed in the tree protection zones to prevent excessive soil compaction from construction traffic. The project arborist will need to review and approve shifting of the fence locations and final placement of wood chips if required. The fabric and wood chips should be removed after construction is complete.
- *Crown Pruning Trees:* If the crowns of any trees need to be raised and/or reduced, it shall occur prior to construction. The pruning shall be conducted by an ISA certified arborist in accordance with ANSI A300 pruning standards in coordination with the project arborist. The pruning shall be the minimum necessary to achieve the required clearance for construction.
- *Erosion Control:* If erosion control is required within or directly adjacent to the tree protection fencing, straw wattles shall be used to avoid excavation.

Additional tree protection recommendations are included in Attachment 3.

¹ Figure 1 from:

Matheny, N. P., & Clark, J. R. (1998). *Trees and development: A technical guide to preservation of trees during land development*. Champaign, IL: International Society of Arboriculture.

Conclusion

After adjustments to the proposed site design and infrastructure improvements, 34 trees are proposed to be retained and 7 trees are proposed to be removed. The previous proposal included the removal of 11 trees.

The trees to be retained as part of the site design and infrastructure improvements will be protected according to the recommendations in this report.

Please contact me if you have questions, concerns, or need any additional information.

Sincerely,



Todd Prager

*ASCA Registered Consulting Arborist #597
ISA Board Certified Master Arborist, WE-6723B
ISA Qualified Tree Risk Assessor
AICP, American Planning Association*

- Attachment 1: Site Plan with Trees and Tree Protection
- Attachment 2: Tree Inventory
- Attachment 3: Tree Protection Recommendations
- Attachment 4: Assumptions and Limiting Conditions

Attachment 1





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Attachment 2

Tree Number	Common Name	Scientific Name	Comments from Arbor Care Tree Specialists	DBH
1	Sitka spruce	<i>Picea sitchensis</i>	Ok	22
2	Sitka spruce	<i>Picea sitchensis</i>	Ok	22
3	Sitka spruce	<i>Picea sitchensis</i>	Ok	12
4	Red alder	<i>Alnus rubra</i>	Ok, tipped tree with horizontal trunk. Stable	12
5	Red alder	<i>Alnus rubra</i>	Large decay pocket. No target. No action required	9
6	Sitka spruce	<i>Picea sitchensis</i>	Ok	9
7	Sitka spruce	<i>Picea sitchensis</i>	Ok	12
8	Sitka spruce	<i>Picea sitchensis</i>	Ok	35
9	Sitka spruce	<i>Picea sitchensis</i>	Phaeolus schweinitzii at base. Leans into wetland.	50
10	Sitka spruce	<i>Picea sitchensis</i>	Ok	12
11	Sitka spruce	<i>Picea sitchensis</i>	Ok	27
12	Red alder	<i>Alnus rubra</i>	Remove. Growing over culvert and decay in plane of lean toward road.	11
13	Sitka spruce	<i>Picea sitchensis</i>	Ok	30
14	Crab apple	<i>Malus sp.</i>	Ok. Cluster of 5 trunks	6-8
15	Sitka spruce	<i>Picea sitchensis</i>	Ok	60
16	Sitka spruce	<i>Picea sitchensis</i>	Ok	50
17	Sitka spruce	<i>Picea sitchensis</i>	Remove. Poor live crown ratio and heavy lean with a heaving root plate	50
18	Sitka spruce	<i>Picea sitchensis</i>	Ok	29
19	Sitka spruce	<i>Picea sitchensis</i>	Ok	36
20	Western hemlock	<i>Tsuga heterophylla</i>	Remove. Heavy lean with a heaving root plate	30
21	Sitka spruce	<i>Picea sitchensis</i>	Ok	36
21.1	Sitka spruce	<i>Picea sitchensis</i>	Added by Todd Prager based on July 21, 2022 site visit. Good health condition and fair structural condition with codominant stems at approximately 50 feet above ground. Crown was moderately one sided due to competition with adjacent trees	36
22	Sitka spruce	<i>Picea sitchensis</i>	Ok	30
23	Sitka spruce	<i>Picea sitchensis</i>	Ok	32
24	Sitka spruce	<i>Picea sitchensis</i>	Ok	40
25	Sitka spruce	<i>Picea sitchensis</i>	Ok	35
26	Sitka spruce	<i>Picea sitchensis</i>	Ok	33



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Attachment 2

Tree Number	Common Name	Scientific Name	Comments from Arbor Care Tree Specialists	DBH
27	Sitka spruce	<i>Picea sitchensis</i>	Ok	30
28	Sitka spruce	<i>Picea sitchensis</i>	Ok	30
29	Sitka spruce	<i>Picea sitchensis</i>	Ok	21
30	Sitka spruce	<i>Picea sitchensis</i>	Ok	19
31	Sitka spruce	<i>Picea sitchensis</i>	Ok	
32	Sitka spruce	<i>Picea sitchensis</i>	Ok	40
33	Sitka spruce	<i>Picea sitchensis</i>	Ok	20
34	Sitka spruce	<i>Picea sitchensis</i>	Ok	35
35	Sitka spruce	<i>Picea sitchensis</i>	Remove. Fomitopsis pinicola seen at 18ft.	35
36	Sitka spruce	<i>Picea sitchensis</i>	Ok	36
37	Sitka spruce	<i>Picea sitchensis</i>	Ok	30
37b	Sitka spruce	<i>Picea sitchensis</i>	Remove. Porodaedalea pini: multiple fruiting bodies extending up trunk	32
38	Sitka spruce	<i>Picea sitchensis</i>	Ok	42
39	Sitka spruce	<i>Picea sitchensis</i>	Ok	24
40	Red alder	<i>Alnus rubra</i>	Ok	22

*This tree inventory is adapted from information collected by Arbor Care Tree Specialists and compiled in their report dated 12-28-2021.

Attachment 3

Tree Protection Recommendations

Before Construction Begins

1. Notify all contractors of tree protection procedures. For successful tree protection on a construction site, all contractors must know and understand the goals of tree protection.
 - a. Hold a tree protection meeting with all contractors to explain the goals of tree protection.
 - b. Have all contractors sign memoranda of understanding regarding the goals of tree protection. The memoranda should include a penalty for violating the tree protection plan. The penalty should equal the resulting fines issued by the local jurisdiction plus the appraised value of the tree(s) within the violated tree protection zone per the current Trunk Formula Method as outlined in the current edition of the ***Guide for Plant Appraisal*** by the Council of Tree & Landscape Appraisers. The penalty should be paid to the owner of the property.
2. Fencing
 - a. Trees to remain on site will be protected by installation of tree protection fencing as shown in Attachment 1.
 - b. Unless otherwise noted, the fencing should be put in place before the ground is cleared to protect the trees and the soil around the trees from disturbances.
 - c. Fencing should be established by the project arborist based on the needs of the trees to be protected and to facilitate construction.
 - d. Fencing should consist of 6-foot-high steel fencing on concrete blocks or 6-foot metal fencing secured to the ground with 8-foot metal posts to prevent it from being moved by contractors, sagging, or falling down.
 - e. Fencing should remain in the position that is established by the project arborist and not be moved without approval from the project arborist.
3. Signage
 - a. All tree protection fencing should have signage as follows so that all contractors understand the purpose of the fencing:

TREE PROTECTION ZONE

DO NOT REMOVE OR ADJUST THE LOCATION OF THIS
TREE PROTECTION FENCING
UNAUTHORIZED ENCROACHMENT MAY RESULT IN FINES

Please contact the project arborist if alterations to the location of the tree protection fencing are necessary.

Todd Prager, Project Arborist, Todd Prager & Associates, 971-295-4835

- b. Signage should be placed every 75-feet or less.

During Construction

1. Protection Guidelines Within the Tree Protection Zones:
 - a. No new buildings; grade change or cut and fill, during or after construction; new impervious surfaces; or utility or drainage field placement should be allowed within the tree protection zones.
 - b. No traffic should be allowed within the tree protection zones. This includes but is not limited to vehicle, heavy equipment, or even repeated foot traffic.
 - c. No storage of materials including but not limiting to soil, construction material, or waste from the site should be permitted within the tree protection zones. Waste includes but is not limited to concrete wash out, gasoline, diesel, paint, cleaner, thinners, etc.
 - d. Construction trailers should not to be parked/placed within the tree protection zones.
 - e. No vehicles should be allowed to park within the tree protection zones.
 - f. No other activities should be allowed that will cause soil compaction within the tree protection zones.
2. The trees should be protected from any cutting, skinning or breaking of branches, trunks or woody roots.
3. The project arborist should be notified prior to the cutting of woody roots from trees that are to be retained to evaluate and oversee the proper cutting of roots with sharp cutting tools. Cut roots should be immediately covered with soil or mulch to prevent them from drying out.
4. Trees that have woody roots cut should be provided supplemental water during the summer months.
5. Any necessary passage of utilities through the tree protection zones should be by means of tunneling under woody roots by hand digging or boring with oversight by the project arborist.
6. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

After Construction

1. Carefully landscape the areas within the tree protection zones. Do not allow trenching for irrigation or other utilities within the tree protection zones.
2. Carefully plant new plants within the tree protection zones. Avoid cutting the woody roots of trees that are retained.
3. Do not install permanent irrigation within the tree protection zones unless it is drip irrigation to support a specific planting or the irrigation is approved by the project arborist.
4. Provide adequate drainage within the tree protection zones and do not alter soil hydrology significantly from existing conditions for the trees to be retained.
5. Provide for the ongoing inspection and treatment of insect and disease populations that can damage the retained trees and plants.
6. The retained trees may need to be fertilized if recommended by the project arborist.
7. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

Attachment 4

Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. The information provided by Patrick/Dave, LLC and their consultants was the basis of the information provided in this report.
2. It is assumed that this property is not in violation of any codes, statutes, ordinances, or other governmental regulations.
3. The consultant is not responsible for information gathered from others involved in various activities pertaining to this project. Care has been taken to obtain information from reliable sources.
4. Loss or alteration of any part of this delivered report invalidates the entire report.
5. Drawings and information contained in this report may not be to scale and are intended to be used as display points of reference only.
6. The consultant's role is only to make recommendations. Inaction on the part of those receiving the report is not the responsibility of the consultant.
7. This report is a summary of my assignment which was to:
 - Visit the property to review the site and trees;
 - Coordinate with the project design team to identify opportunities for additional tree preservation;
 - Provide my recommendations for tree preservation and removal based on the site constraints; and
 - Provide tree protection recommendations for the construction of site and infrastructure improvements.