

Exhibit M – Arborist Report



## Todd Prager & Associates<sub>LLC</sub>

### MEMORANDUM

**DATE:** July 5, 2023

**TO:** Gene Bolante (Studio 3 Architecture)

**FROM:** Christine Johnson, ISA Certified Arborist® PN-8730A

**RE:** Tree Protection Plan for Proposed Lava Drive Apartments Development  
1600 SE Lava Drive, Milwaukie, OR 97206

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### Summary

A 13-unit multi-family apartment complex is proposed at 1600 SE Lava Drive in Milwaukie, Oregon. Existing trees include three onsite trees and two trees in the abutting right-of-way. The three onsite trees are proposed for removal. This report discusses how the proposed development meets the four standards: preservation, planting, protection, and soil volume. Tree protection fencing is recommended to preserve two right-of-way trees abutting the development site. Twenty-six (26) trees will be planted to meet tree canopy coverage requirements.

### Background

The property is zoned high density residential (R-HD). The site area is 17,984 square feet. There are no rare, threatened, or notable trees on the property.

### Assignment

The assignment asked of our firm was:

1. Make one site visit to inventory existing onsite, right-of-way, and offsite trees.
2. Prepare a tree plan to meet City of Milwaukie tree code Chapter 16.32.042, Tree Preservation and Planting in Residential Zones.

### Tree Inventory

I visited the site on June 23, 2023. Five (5) trees were inventoried (Attachment 1). The following information was collected for each tree: tree number, common name, scientific name, trunk diameter (DBH), canopy radius, canopy area, health condition, structural condition, whether the tree is on the Milwaukie Rare or Threatened Tree List, whether the tree is on the Oregon Noxious Weed List or Milwaukie Invasive Tree List, location (onsite, right-of-way, or offsite), pertinent comments, and treatment (remove or retain).

The tree numbers listed in Attachment 1 correspond to tree numbers on the site plans in Attachments 3 and 4. Trees in the abutting right-of-way are tagged with aluminum tags. Accessible onsite trees were tagged.

### Tree Preservation Standards (16.32.042.B)

At least 30 percent site canopy coverage or all existing site canopy coverage when the site has less than 30 percent existing coverage, must be retained unless mitigation is provided. Table 1 is a summary of the mitigation requirements for preservation.

**Table 1** Summary of mitigation requirements for preservation.

Onsite canopy after proposed removals	Mitigation fee:	Mitigation fee: Qualified Affordable Housing
<30% - 22.5%	\$4000.00	\$2000.00
<22.5% - 15%	\$4000.00	\$2000.00
<15% - 7.5%	\$4000.00	\$2000.00
<7.5% - 0%	\$4000.00	\$2000.00

There are three existing onsite trees, trees 1, 4 and 5. These trees provide a total of 2,076 square feet or 11.5 percent<sup>1</sup> site canopy coverage. All three trees are proposed for removal to facilitate development.

Table 2 is a summary of the tree preservation standards and applicable mitigation requirements.

**Table 2** Tree preservation and mitigation requirements for this project.

Site Area	40% Site Area	Existing Canopy	Retained Canopy	Mitigation Fee
17,984 ft <sup>2</sup>	7,194 ft <sup>2</sup>	2,076 ft <sup>2</sup> (11.5%)	0 ft <sup>2</sup> (0%)	\$4,000.00

### Tree Planting Standards (16.32.042.C)

To achieve 40 percent canopy coverage 7,194 square feet of tree canopy is needed (Table 2).

A variety of trees selected from the City of Milwaukie’s Tree Crown Area Reference List are proposed; there are also four cultivars not on the City’s list proposed (Attachment 2). The minimum size of planted trees is 1.5-inch caliper for broadleaf trees. The proposed species and quantities are listed in Attachment 2 and the planting plan is provided in Attachment 5. Trees included in the canopy coverage calculation have access to more than 1,000 cubic feet of soil. Root barriers that extend a minimum of 18 inches deep are proposed near sidewalks and curbs (Attachment 5).

### Mitigation Standards (16.32.042.D)

#### *Preservation standard*

The existing trees provide a small percentage of site canopy coverage and are proposed for removal. Two existing trees abutting right-of-way provide 423 square feet of canopy coverage and will be preserved. Thus, a tree preservation mitigation fee of \$4,000 is required as summarized in Table 2 above, and planting is required to meet site canopy coverage requirements.

<sup>1</sup>The crown areas of trees 1, 4 and 5 is 2,076;  $2,076 \div 17,984 = 11.5\%$ .

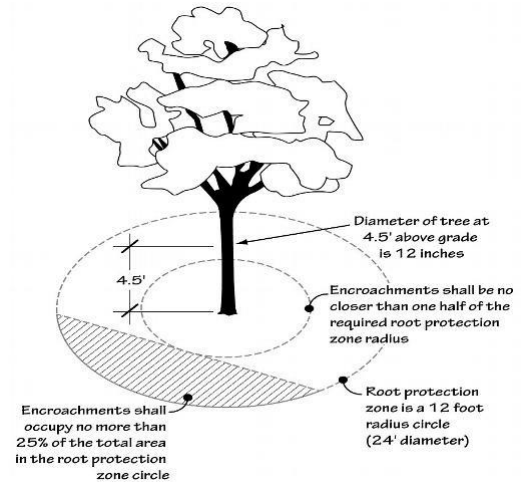
### ***Planting standard***

The tree canopy needed to reach 40 percent coverage is 7,194 square feet. Twenty-one (21) proposed private trees and five (5) proposed street trees combined with two (2) existing right-of-way trees will provide a total of 7,372 square feet of canopy coverage (Attachment 2). Please note that adjustments to the tree planting plan may need to be made if planned trees are unavailable. Equivalent trees listed on the City of Milwaukie Tree Crown Area Reference List will be selected if selected trees and shrubs are unavailable.

### **Tree Protection Standards (16.32.042.F)**

A typical minimum tree protection zone allows encroachments no closer than a radius from a tree of .5 feet per inch of DBH if no more than 25 percent of the root protection zone area (estimated at one foot radius per inch of DBH) is impacted. Figure 1 illustrates this concept.

The proximity of development to tree 2 requires a performance path for tree protection so that there may be sufficient room to construct the apartment building and amend soil disturbed by construction. Tree protection fencing is to be set at the property line as shown on Attachment 4. Tree protection fencing is set 7 feet west of tree 2.



**Figure 1: Typical minimum protection zone**

The following performance path tree protection measures are recommended to retain the two abutting trees:

- 1. Tree protection fencing – Approximately 170 linear feet:**
  - a. *Height:* Provide a minimum 4-foot-high metal fence.
  - b. *Posts & Spacing:* Place 6-foot-high metal stakes no more than 10-feet apart.
  - c. *Existing Grade:* Install fencing flush with the initial undisturbed grade of the protection zone.
  - d. *Locations:* Install fencing as shown in Attachment 4.
  - e. *Staking:* Stake the footers into the ground so the fence cannot be easily moved.
- 2. Tree protection signage:**
  - a. Weatherproof tree protection signage shall be placed on tree protection fencing.
  - b. Signage should be placed at intervals of every fence panel/section.
  - c. See Attachment 7 for an example tree protection sign.
- 3. Tree protection fencing maintenance and removal:**
  - a. *Maintenance:* Maintain protection fencing in good effective condition at the approved and inspected location. Fencing that is damaged during site work shall be repaired and placed in the approved location prior to resuming work in the area. Failure to maintain tree protection fencing in the approved locations may result in a code violation.
  - b. *Removal:* Fencing must remain in place for the duration of the project until the final inspection.

4. **Erosion control:** Straw wattles should be used as erosion control on the east perimeter where tree protection fencing exists. Do not trench or use sediment fencing where soil and root protection is proposed.
5. **Report sharing:** Share this report in its entirety with the project team and construction staff.
6. **Additional tree protection recommendations:** Additional tree protection recommendations that generally apply to construction projects are provided in Attachment 8.

### **Soil Volume Standards (16.32.042.G)**

A performance path approach for soil volume is proposed (Attachment 5). Soil on the site is classified as 71B – Quatama loam (Attachment 6). This is a moderately well-draining loam soil suitable for planting. That said, the site is being modified to a 13-unit apartment complex and requires onsite stormwater management. It is impractical to protect the majority of the existing soil during construction due to the close proximity of proposed buildings and site improvements.

The following soil management practices are recommended to meet the required 1,000 cubic feet of soil volume with the capacity to support healthy growth to maturity per tree to be planted:

1. **Soil testing and soil amendments.** After grading is completed, the compacted soil shall be tilled and amended with either an amended soil blend or compost to a depth of at least 24-inches deep. A soil test is recommended to determine the best soil treatment.

### **Submittal Requirements (16.32.042.H)**

Requirements outlined in Subsection 16.32.042.H.4 are discussed below.

- a. ***Provide a written narrative that summarizes the information from the tree inventory, tree preservation plan, and tree canopy plan.***

This report shall serve as the written narrative report that summarizes the information from the tree inventory (Attachment 1), tree preservation plan (Attachment 3), and tree planting plan (Attachment 5). Therefore, this requirement is met.

- b. ***Provide findings and calculations that demonstrate whether the tree preservation standards in Subsection 16.32.042.B have been met.***

No onsite trees will be preserved. The existing tree canopy will be reduced from 11.5 to 0 percent. Therefore, a tree preservation mitigation fee of \$4,000.00 is required.

- c. ***Provide findings and calculations that demonstrate whether the tree planting standards in Subsection 16.32.042.C have been met.***

Tree planting standards have been met through tree planting. Twenty-one (21) private trees and five (5) street trees are proposed for planting (Attachment 5). Calculations are provided in Attachment 2. Therefore, this requirement is met.

- d. ***If the tree preservation and/or tree planting standards have not been met, provide calculations for the applicable tree mitigation fees as required by Subsection 16.32.042.D.***

The tree preservation plan and tree planting plan standards have been met through a combination of tree preservation mitigation fees and tree planting. The preservation

standard will be met through payment of applicable fees of \$4,000 and 26 trees will be planted to meet the tree planting standard.

- e. If the applicant is seeking a variance to the tree preservation and/or tree planting standards in place of providing mitigation fees, provide findings that demonstrate the proposal provides equivalent or greater environmental benefits as preserving or planting the required tree canopy consistent as required by Subsection 16.32.042.E.*

The applicant is not seeking a variance to the tree preservation and/or tree planting standards. Therefore, this standard is not applicable.

- f. Provide findings that demonstrate compliance with the tree protection standards in Subsection 16.32.042.F.*

The recommended tree protection measures are in compliance with tree protection standards as described in the above paragraphs, in Attachment 4, and in Attachment 8. Therefore, this standard has been met.

- g. Provide findings that demonstrate compliance with the soil volume standards in Subsection 16.32.042.G.*

At least 1,000 cubic feet of soil volume is provided for every plant that is being applied toward meeting the City's canopy coverage requirement. The planting plan shows the areas of the site where soil will be undisturbed behind tree protection fencing and areas where soil will be amended for proposed plantings (Attachment 5). Therefore, this standard has been met.

## Conclusion

The proposed 13-unit apartment complex at 1600 SE Lava Drive can meet the requirements set forth in the City of Milwaukie's Tree Code Chapter 16.32.042. Two existing trees in the abutting right-of-way will be retained and protected. Twenty-one (21) private trees and five (5) street trees will be planted to meet part of the 40 percent tree canopy coverage requirement. Fees of \$4,000.00 will be paid to the Tree Fund to meet mitigation standards for tree preservation.

Please let me know if you have any questions about the information or recommendations made in this report.

Sincerely,



Christine Johnson

ISA Certified Arborist®, PN-8730A

ISA Qualified Tree Risk Assessor

Member, American Society of Consulting Arborists

christine@toddprager.com |971.978.9381

Enclosures: Attachment 1 – Tree Inventory  
Attachment 2 – Tree Canopy Coverage Calculations  
Attachment 3 – Existing Conditions Plan  
Attachment 4 – Tree Preservation Plan  
Attachment 5 – Tree Planting Plan and Soil Plan  
Attachment 6 – Soil Map  
Attachment 7 – Tree Protection Signage  
Attachment 8 – Tree Protection Recommendations  
Attachment 9 – Assumptions and Limiting Conditions



Todd Prager & Associates  
LLC

Attachment 1 - Tree Inventory

Lava Drive Apartments  
June 23, 2023

Tree No.	Common Name	Scientific Name	DBH <sup>1</sup> (in)	Single DBH <sup>2</sup> (in)	C-Rad <sup>3</sup> (ft)	Crown Area <sup>4</sup> (ft <sup>2</sup> )	Condition <sup>5</sup>	Structure <sup>5</sup>	Rare or Threatened <sup>6</sup>	Noxious or Invasive <sup>7</sup>	Location <sup>8</sup>	Comments	Treatment (remove or retain)
1	bigleaf maple	<i>Acer macrophyllum</i>	16,13,11,9,9	28	20	1256	good	fair	no	no	onsite	DBH estimated, history of topping, splits into codominant leaders at 2' and 4'	remove
2	blue spruce	<i>Picea pungens</i>	32	32	10	314	poor	fair	no	no	ROW	DBH adjusted for heavy ivy load, codominant leaders in upper crown	retain
3	Scotch pine	<i>Pinus sylvestris</i>	18	18	13	531	good	fair	no	no	ROW	DBH measured at 3.5', codominant leaders	retain
4	weeping white birch	<i>Betula pendula</i>	9	9	6	113	poor	poor	no	no	onsite	asymmetrical crown, 60% live foliage, dying from the top down	remove
5	flowering cherry	<i>Prunus serrulata</i>	36	36	15	707	good	fair	no	no	onsite	DBH estimated, heavy ivy load on trunk and lower crown	remove

<sup>1</sup>DBH is the trunk diameter in inches measured per International Society of Arboriculture (ISA) standards.

<sup>2</sup>Single DBH is the trunk diameter of a multi-stem tree converted to a single number according to the following formula: square root of the sum of the squared diameter of each trunk at 4½ feet above mean ground level.

<sup>3</sup>C-Rad is the approximate crown radius in feet.

<sup>4</sup>Crown area is calculated in feet using the formula (crown radius)<sup>2</sup> x π.

<sup>5</sup>Condition and Structure ratings range from dead, very poor, poor, fair, to good.

<sup>6</sup>Rare, threatened or notable are trees on the City of Milwaukie Rare or Threatened Tree List.

<sup>7</sup>Noxious or Invasive are trees on the Oregon Noxious Weed List or Milwaukie Invasive Tree List. These trees are not included in total canopy coverage calculations. Species include: English hawthorn (*Crataegus monogyna*), Tree-of-heaven (*Ailanthus altissima*)

<sup>8</sup>Location is either onsite, right-of-way, or offsite. Offsite trees have root systems that extend onto the property.





Attachment 2 - Tree Canopy Coverage Calculations

Common Name	Scientific Name	Tree type	Height (ft)	Width (ft)	Mature crown area <sup>1</sup> (s.f.)	75% Crown Area Development Code Standard <sup>2</sup>	Existing Crown Area <sup>3</sup> (s.f.)	50 % Crown Area Development Code Standard <sup>4</sup>	Number of Trees	Contribution to 40 %
incense cedar	<i>Calocedrus decurrens</i>	private	90	15	177	133	n/a	n/a	3	398
Eastern redbud	<i>Cercis canadensis</i>	private	25	30	707	530	n/a	n/a	4	2121
Eddie's white wonder dogwood	<i>Cornus nuttallii</i> × <i>florida</i>	private	25	20	314	236	n/a	n/a	1	236
Skyrocket® english oak	<i>Quercus robur</i> 'Fastigata'	private	45	15	177	133	n/a	n/a	3	398
Blue weeping Nootka Cypress <sup>5</sup>	<i>Chamaecyparis nootkatensis</i> 'Glauca Pendula'	private	35	12	113	85	n/a	n/a	4	339
Dawyck purple European beech <sup>6</sup>	<i>Fagus sylvatica</i> 'Dawyck Purple'	private	75	35	962	721	n/a	n/a	2	1442
Black gum <sup>7</sup>	<i>Nyssa sylvatica</i> 'Wildfire'	private	50	30	707	530	n/a	n/a	2	1060
weeping white spruce <sup>8</sup>	<i>Picea glauca</i> 'Pendula'	private	70	12	113	85	n/a	n/a	2	170
Vanessa Persian parrotia <sup>9</sup>	<i>Parrotia persica</i> 'Vanessa'	ROW	30	20	314	n/a	n/a	157.0	5	785
									Proposed Canopy	6949
(tree 2) blue spruce	<i>Picea pungens</i>	ROW	n/a	n/a	n/a	n/a	314	157	n/a	157
(tree 3) Scotch pine	<i>Pinus sylvestris</i>	ROW	n/a	n/a	n/a	n/a	531	266	n/a	266
									Existing Canopy	423
									Total site square footage (s.f.)	17,984
									40% Canopy Coverage Requirement (s.f.)	7,194
									Proposed Canopy Coverage (s.f.)	6,949
									Existing Canopy Coverage (s.f.)	423
									<b>Total Canopy Coverage (s.f.)</b>	<b>7,372</b>

<sup>1</sup> Mature Crown Area is the existing crown area ××× the existing canopy multiplier.

<sup>2</sup> 75% Crown Area Development Code Standard is calculated by taking the mature crown area and multiplying it by 75%.

<sup>3</sup> Existing canopy multiplier is a percentage defined by the Master Fee Schedule.

<sup>4</sup> 50% Crown Area Development Code Standard is calculated by taking the mature crown area and multiplying it by 50%.

<sup>5</sup> Canopy spread data source for Blue weeping Nootka cypress: SelecTree. UFEI. "Callitropsis nootkatensis 'Pendula' Tree Record." 1995-2023. Cal Poly State University, San Luis Obispo. Accessed on Jul 3, 2023.

< <https://selectree.calpoly.edu/tree-detail/332> >

<sup>6</sup> Canopy spread data source for Dawyck purple European beech: SelecTree. UFEI. "Fagus sylvatica 'Dawyck' Tree Record." 1995-2023. Cal Poly State University, San Luis Obispo. Accessed on Jul 3, 2023.

< <https://selectree.calpoly.edu/tree-detail/593> >

<sup>7</sup> Canopy spread data source for Wildfire black gum: Monrovia. "Wildfire Tupelo." Accessed on Jul 3, 2023. < <https://www.monrovia.com/wildfire-tupelo.html> >

<sup>8</sup> Canopy spread data source for weeping white spruce: SelecTree. UFEI. "Picea glauca 'Pendula' Tree Record." 1995-2023. Cal Poly State University, San Luis Obispo. Accessed on Jul 3, 2023.

< <https://selectree.calpoly.edu/tree-detail/1882> >

<sup>9</sup> Canopy spread data source Vanessa Persian parrotia: Great Plant Picks. "Parrotia persica 'Vanessa.' 2020. Elisabeth C. Miller Botanical Garden, Seattle, WA. Accessed on Jul 3, 2023.

< <https://www.greatplantpicks.org/plantlists/view/1089> >

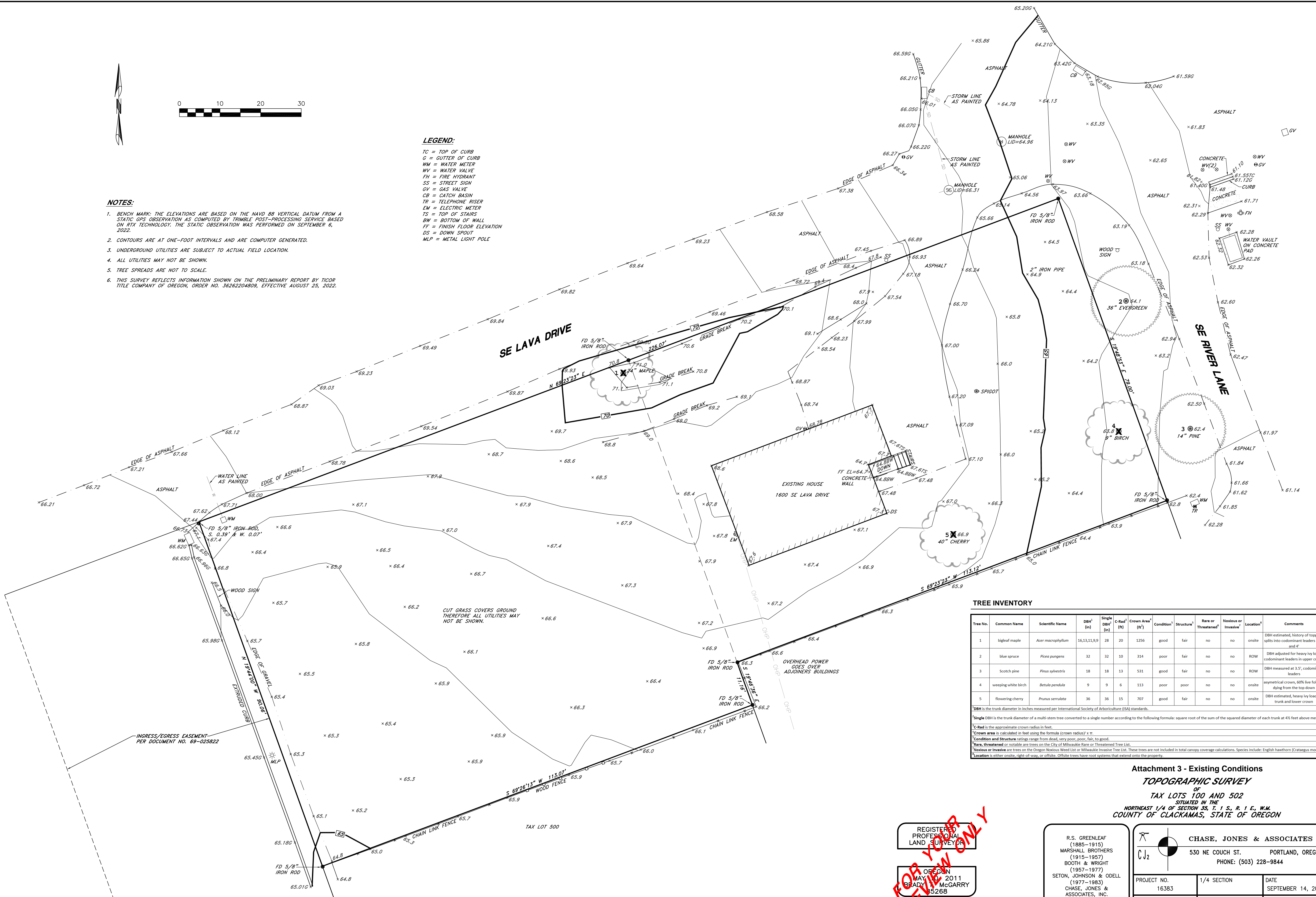


**NOTES:**

- BENCH MARK: THE ELEVATIONS ARE BASED ON THE NAVD 88 VERTICAL DATUM FROM A STATIC GPS OBSERVATION AS COMPUTED BY TRIMBLE POST-PROCESSING SERVICE BASED ON RTX TECHNOLOGY. THE STATIC OBSERVATION WAS PERFORMED ON SEPTEMBER 6, 2022.
- CONTOURS ARE AT ONE-FOOT INTERVALS AND ARE COMPUTER GENERATED.
- UNDERGROUND UTILITIES ARE SUBJECT TO ACTUAL FIELD LOCATION.
- ALL UTILITIES MAY NOT BE SHOWN.
- TREE SPREADS ARE NOT TO SCALE.
- THIS SURVEY REFLECTS INFORMATION SHOWN ON THE PRELIMINARY REPORT BY TICOR TITLE COMPANY OF OREGON, ORDER NO. 36262204809, EFFECTIVE AUGUST 25, 2022.

**LEGEND:**

- TC = TOP OF CURB
- G = GUTTER OF CURB
- WM = WATER METER
- WV = WATER VALVE
- FH = FIRE HYDRANT
- SS = STREET SIGN
- GV = GAS VALVE
- CB = CATCH BASIN
- TR = TELEPHONE RISER
- EM = ELECTRIC METER
- TS = TOP OF STAIRS
- BW = BOTTOM OF WALL
- FF = FINISH FLOOR ELEVATION
- DS = DOWN SPOUT
- MLP = METAL LIGHT POLE



**TREE INVENTORY**

Tree No.	Common Name	Scientific Name	DBH <sup>1</sup> (in)	Single DBH <sup>1</sup> (ft)	C-Rad <sup>2</sup> (ft)	Crown Area <sup>3</sup> (ft <sup>2</sup> )	Condition <sup>4</sup>	Structure <sup>5</sup>	Rare or Threatened <sup>6</sup>	Noxious or Invasive <sup>7</sup>	Location <sup>8</sup>	Comments	Treatment (remove or retain)	
1	bigleaf maple	Acer macrophyllum	16.13	13.13	28	20	1256	good	fair	no	no	onsite	DBH estimated, history of topping, splits into codominant leaders at 2' and 4'	remove
2	blue spruce	Picea pungens	32	32	10	314	poor	fair	no	no	ROW	DBH adjusted for heavy ivy load, codominant leaders in upper crown	retain	
3	Scotch pine	Pinus sylvestris	18	18	13	531	good	fair	no	no	ROW	DBH measured at 3.5', codominant leaders	retain	
4	weeping white birch	Betula pendula	9	9	6	113	poor	poor	no	no	onsite	asymmetrical crown, 60% live foliage, dying from the top down	remove	
5	flowering cherry	Prunus serrulata	36	36	15	707	good	fair	no	no	onsite	DBH estimated, heavy ivy load on trunk and lower crown	remove	

<sup>1</sup>DBH is the trunk diameter in inches measured per International Society of Arboriculture (ISA) standards.  
<sup>2</sup>Single DBH is the trunk diameter of a multi-stem tree converted to a single number according to the following formula: square root of the sum of the squared diameter of each trunk at 4 1/2 feet above mean ground level.  
<sup>3</sup>C-Rad is the approximate crown radius in feet.  
<sup>4</sup>Crown area is calculated in feet using the formula (crown radius) x π.  
<sup>5</sup>Condition and Structure ratings range from dead, very poor, poor, fair, to good.  
<sup>6</sup>Rare, threatened or notable are trees on the City of Milwaukie Rare or Threatened Tree List.  
<sup>7</sup>Noxious or Invasive are trees on the Oregon Noxious Weed List or Milwaukie Invasive Tree List. These trees are not included in total canopy coverage calculations. Species include: English hawthorn (Crataegus monogyna), Tree-of-Heaven (Ailanthus altissima), and others.  
<sup>8</sup>Location is either onsite, right-of-way, or offsite. Offsite trees have root systems that extend onto the property.

**Attachment 3 - Existing Conditions  
TOPOGRAPHIC SURVEY  
OF  
TAX LOTS 100 AND 502  
SITUATED IN THE  
NORTHEAST 1/4 OF SECTION 35, T. 1 S., R. 1 E., W.M.  
COUNTY OF CLACKAMAS, STATE OF OREGON**

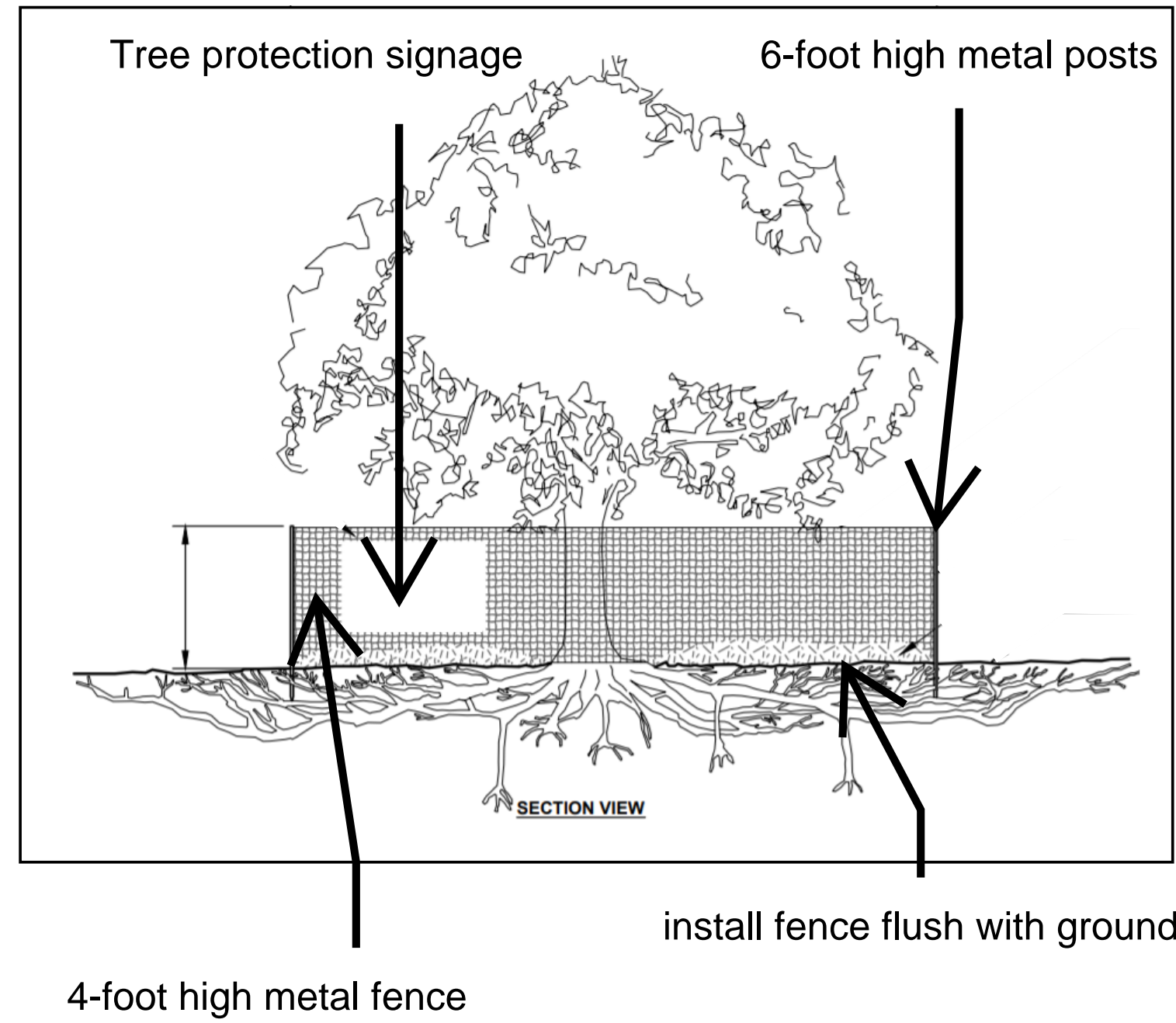
REGISTERED PROFESSIONAL LAND SURVEYOR  
 OREGON  
 MAY 11, 2011  
 BRADY MCGARRY  
 5268  
 EXPIRES: 12-31-24

R.S. GREENLEAF  
 (1885-1915)  
 MARSHALL BROTHERS  
 (1915-1957)  
 BOOTH & WRIGHT  
 (1957-1977)  
 SETON, JOHNSON & ODELL  
 (1977-1983)  
 CHASE, JONES & ASSOCIATES, INC.  
 (1983- )

**CHASE, JONES & ASSOCIATES INC.**  
 530 NE COUCH ST. PORTLAND, OREGON 97232  
 PHONE: (503) 228-9844

PROJECT NO. 16383	1/4 SECTION	DATE SEPTEMBER 14, 2022	SHEET 1
DRAWN BY DLW	CHECKED BY EDJ	SCALE 1" = 10'	OF 1

## TREE PROTECTION FENCING DETAIL

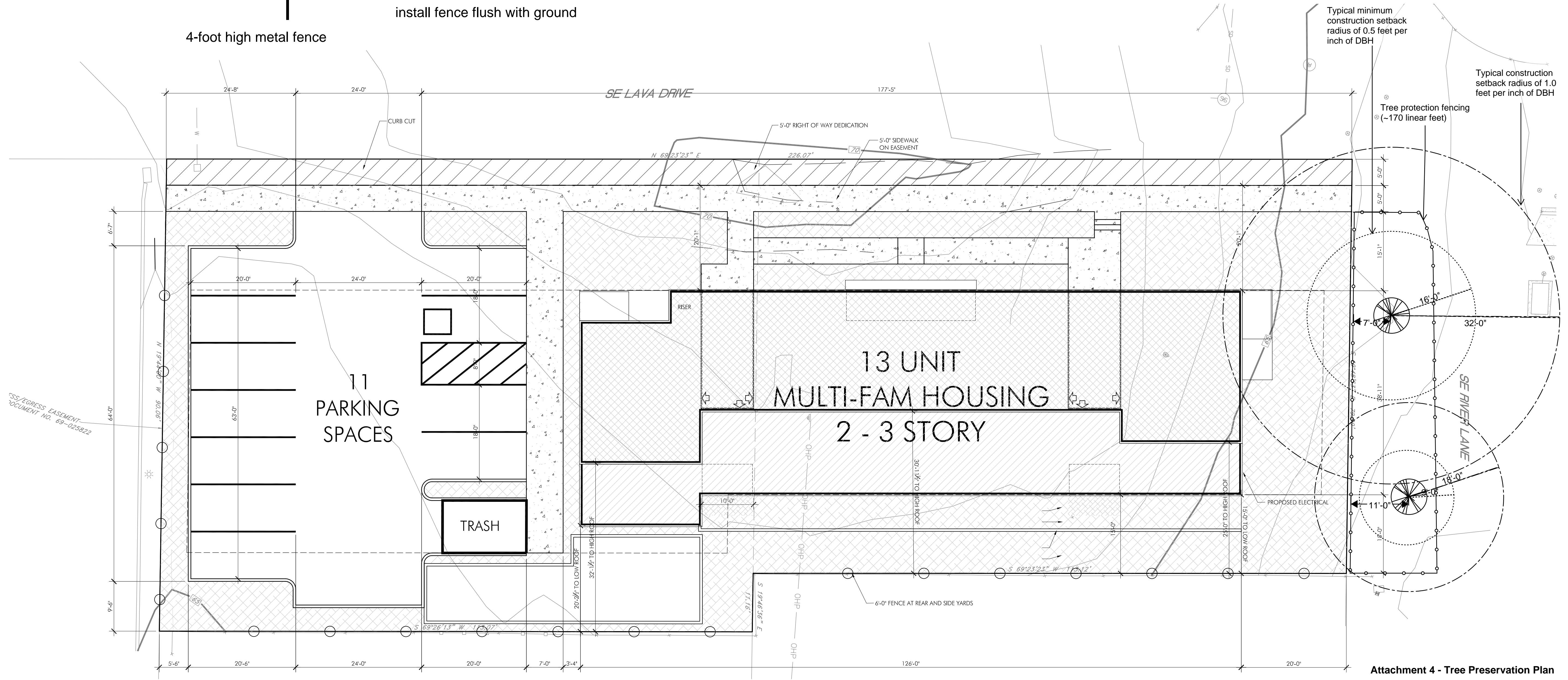


## SITE DISTURBANCE NOTES

- (1) Demolition - There were no existing structures at the time of the site visit. Therefore, no demolition is occurring near protected trees.
- (2) Tree removal - Three onsite trees are proposed for removal: 1, 4, and 5 (Attachment 1).
- (3) Staging, storage, and construction access - All construction access will be from SE Lava Drive. Materials are to be staged and stored outside of tree protection fencing and root protection areas.
- (4) Grading and filling - No grading or filling is to occur in the tree protection or root protection areas.
- (5) Paving - No paving is proposed near protected trees.
- (6) Construction of structures, foundations, and walls - All proposed structures are show on this site plan.
- (7) Utility construction - No utilities are proposed near protected trees.
- (8) Trenching and boring - No trenching or boring is proposed near protected trees.
- (9) Excavation - No project arborist oversight is required for this project.
- (10) There are no additional ground disturbing activities that would impact protected trees.

IN THE EVENT CONFLICTS ARE DISCOVERED BETWEEN THE ORIGINAL SIGNED AND SEALED DOCUMENTS PREPARED BY THE ARCHITECTS AND/OR THEIR CONSULTANTS, AND ANY COPY OF THE DOCUMENTS TRANSMITTED BY MAIL, FAX, ELECTRONICALLY OR OTHERWISE, THE ORIGINAL SIGNED AND SEALED DOCUMENTS SHALL GOVERN.

PROJECT # 2022-175  
 DATE: 2 JUNE 2023  
 REVISIONS



Attachment 4 - Tree Preservation Plan

NEW APARTMENT BUILDING  
**LAVA DRIVE APARTMENTS**  
 1600 SE LAVA DRIVE  
 MILWAUKIE, OREGON 97206



Preliminary Plant Schedule

TREES	QTY	BOTANICAL / COMMON NAME	SIZE
	3	Calocedrus decurrens / Incense Cedar	8-10" Ht. Min., B&B
	4	Cercis canadensis / Eastern Redbud	2" Cal., B&B
	4	Chamaecyparis nootkatensis 'Glauca Pendula' / Blue Weeping Nootka Cypress	8-10" Ht. Min., B&B
	1	Cornus nuttallii x florida 'Eddie's White Wonder' / Eddie's White Wonder Dogwood	2" Cal., B&B
	2	Fagus sylvatica 'Dawcyk Purple' / Dawcyk Purple European Beech	2" Cal., B&B
	3	Nyssa sylvatica 'Wildfire' / Black Gum	2" Cal., B&B
	5	Parrotia persica 'Vanessa' / Vanessa Persian Parrotia	2" Cal., B&B
	2	Picea glauca 'Pendula' / Weeping White Spruce	8-10" Ht. Min., B&B
	3	Quercus robur 'Fastigiata' / Skyrocket English Oak	2" Cal., B&B

SHRUBS	QTY	BOTANICAL / COMMON NAME	SIZE
	57	Abelia x grandiflora 'Kaleidoscope' / Kaleidoscope Glossy Abelia	2 Gal.
	39	Euonymus japonicus 'Green Spire' / Green Spire Japanese Euonymus	1 Gal.
	3	Ilex crenata 'Sky Pencil' / Sky Pencil Japanese Holly	24"-30" Ht.
	16	Ilex crenata 'Soft Touch' / Soft Touch Japanese Holly	2 Gal.
	37	Nandina domestica 'Atropurpurea Nana' / Dwarf Nandina	1 Gal.
	14	Osmanthus heterophyllus 'Goshiki' / Goshiki Holly Olive	5 Gal.
	48	Rhaphiolepis indica 'Ballerina' / Ballerina Indian Hawthorn	2 Gal.
	31	Rhaphiolepis umbellata 'Snow White' / Yedda Hawthorn	3 Gal.
	18	Sarcococca confusa / Fragrant Sarcococca	1 Gal.

GRASSES/PERENNIALS	QTY	BOTANICAL / COMMON NAME	SIZE
	17	Calamagrostis x acutiflora 'Karl Foerster' / Feather Reed Grass	1 Gal.
	13	Liriope muscari 'Big Blue' / Big Blue Lilyturf	1 Gal.
	27	Pennisetum alopecuroides 'Hameln' / Hameln Fountain Grass	1 Gal.

GROUND COVERS	QTY	BOTANICAL / COMMON NAME	SIZE	SPACING
	374 (808 sf)	Fragaria chiloensis / Beach Strawberry	4" Pot	18" o.c.
	6 (86 sf)	Rubus pentalobus 'Emerald Carpet' / Emerald Carpet Creeping Raspberry	1 Gal.	48" o.c.
	1,897 sf	Pro Time 501 Water Smarter Fescue or Equal	Seed at rate of 7-10 lbs per 1,000 sf	

Stormwater Plant Schedule

GROUND COVERS	QTY	BOTANICAL / COMMON NAME	SIZE	SPACING
	181	Carex densa / Dense Sedge	1 Gal.	9" o.c., Plant randomly for full coverage
	181	Juncus tenuis / Slender Rush	1 Gal.	
	181	Scirpus microcarpus / Small Fruited Bulrush	1 Gal.	

General Notes:

- PLANS ARE PRELIMINARY, NOT FOR CONSTRUCTION OR BIDDING.
- SEE ARCHITECTURAL DRAWINGS FOR SITE PLAN.
- SEE CIVIL DRAWINGS FOR GRADING AND UTILITIES.
- STREET TREES SELECTED FROM MILWAUKIE APPROVED STREET TREE LIST.
- SITE TO BE IRRIGATED BY AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM.
- PRELIMINARY PLANT SCHEDULE SEE THIS SHEET.

Legend:

- EXISTING TREES TO REMAIN
- PICNIC TABLE

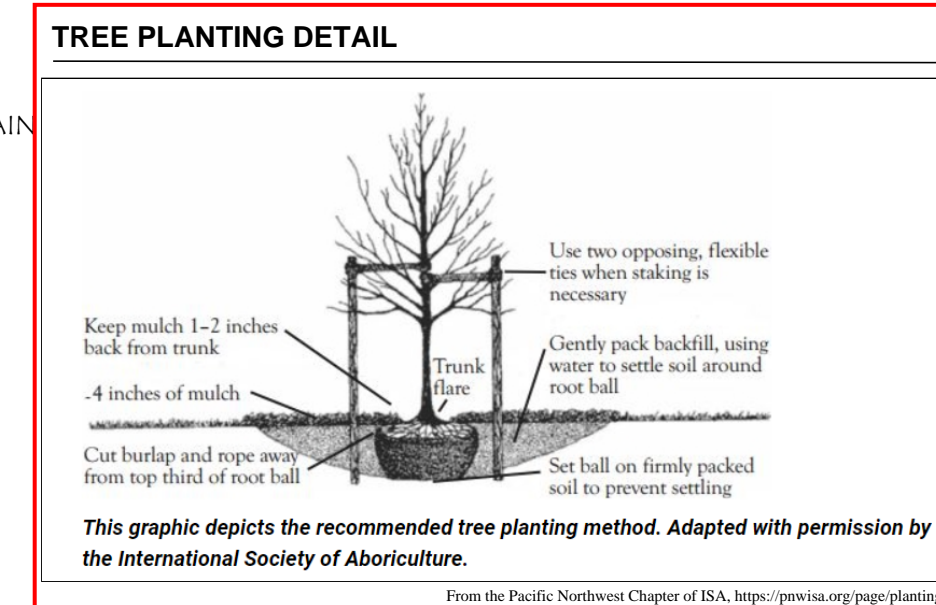
Site Information

TOTAL SITE SQUARE FOOTAGE: 17,984 SF  
MINIMUM LANDSCAPE REQUIRED: 15%  
PROPOSED LANDSCAPE SF: 5,565 SF

1 TREE PER 2,000 SF OF SITE AREA  
17,984 SF = 9 TREES  
TREES TO PROVIDE AT LEAST 1/3 CANOPY COVERAGE OF COMMON OPEN SPACE WITHIN 5 YEARS

STREET TREES ALONG LAVA: 40' O.C.

NO MORE THAN 20% LANDSCAPE TO BE OPEN BARK MULCH.



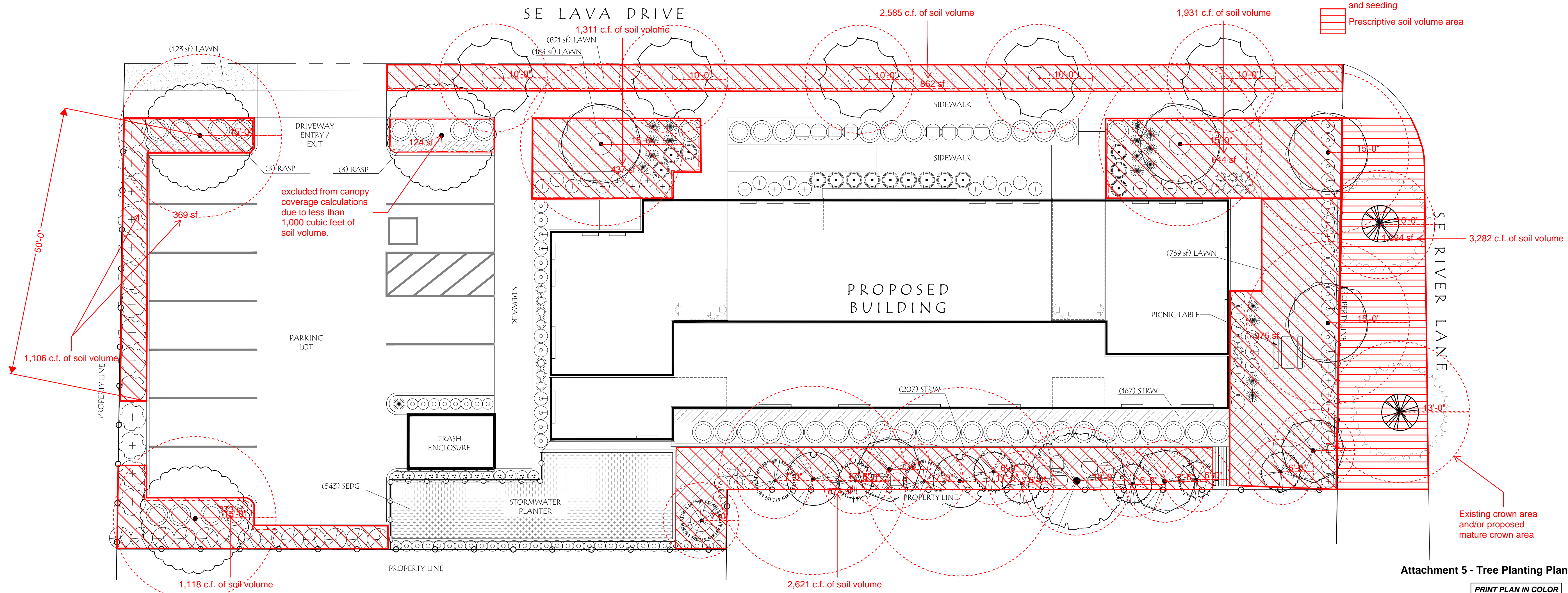
Stormwater Planter with Underdrain Planting Requirements

FACILITY NUMBER	FACILITY SF	ZONE A SF	HERBACEOUS
1	679 SF	679 SF	543

Requirements per 100 SF  
80 Herbaceous -OR-  
72 Herbaceous and 4 Small Shrubs  
24" Min. Depth BES Standard Blended Soil Mix

SOIL VOLUME LEGEND

- Performance soil volume area  
Soil to be amended with compost after construction is complete and prior to planting and seeding
- Prescriptive soil volume area



Laurus Designs, LLC

1012 Pine Street  
Silverton, Oregon  
503.784.6494

Lava Drive Apartments

SE Lava Drive  
Milwaukie, Oregon

REGISTERED  
643  
PRELIMINARY  
LAURA A. ANTONSON  
OREGON  
11/16/2007  
LANDSCAPE ARCHITECT

PRELIMINARY PLANTING PLAN

SCALE: 1"=10'-0"  
0' 5' 10' 20'  
SCALE

June 16th, 2023

REVISIONS

#	DATE	NOTES	INITIALS

L1.1

SHEET 1 OF 1

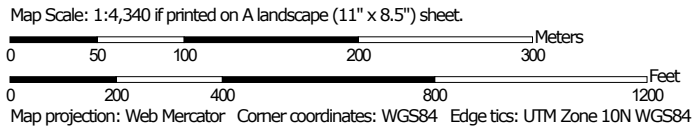
PROJECT #: 1542R

# Attachment 6 - Soil Map

Soil Map—Clackamas County Area, Oregon, and Multnomah County Area, Oregon  
(Soil Map 1600 SE Lava Drive, Milwaukie, OR 97222 )




Soil Map may not be valid at this scale.




Soil Map—Clackamas County Area, Oregon, and Multnomah County Area, Oregon  
 (Soil Map 1600 SE Lava Drive, Milwaukie, OR 97222 )


### MAP LEGEND

#### Area of Interest (AOI)

 Area of Interest (AOI)

#### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

#### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

#### Water Features



Streams and Canals

#### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

#### Background



Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon  
 Survey Area Data: Version 19, Sep 14, 2022

Soil Survey Area: Multnomah County Area, Oregon  
 Survey Area Data: Version 21, Sep 14, 2022

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 13, 2019—Jul 25, 2019

Soil Map—Clackamas County Area, Oregon, and Multnomah County Area, Oregon  
(Soil Map 1600 SE Lava Drive, Milwaukie, OR 97222 )

## MAP LEGEND

## MAP INFORMATION

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
71B	Quatama loam, 3 to 8 percent slopes	22.2	28.1%
82	Urban land	24.1	30.4%
93E	Xerochrepts-Rock outcrop complex, moderately steep	19.4	24.5%
W	Water	12.2	15.4%
<b>Subtotals for Soil Survey Area</b>		<b>77.9</b>	<b>98.4%</b>
<b>Totals for Area of Interest</b>		<b>79.2</b>	<b>100.0%</b>

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
W	Water	1.3	1.6%
<b>Subtotals for Soil Survey Area</b>		<b>1.3</b>	<b>1.6%</b>
<b>Totals for Area of Interest</b>		<b>79.2</b>	<b>100.0%</b>



Attachment 7 - Tree Protection Signage

***STOP!***  
***DO NOT MOVE THIS FENCE.***

# TREE PROTECTION ZONE

Inside the fencing is a tree protection zone, not to be disturbed unless prior approval has been obtained per the approved tree protection plan. Penalties will apply for violations (City of Milwaukie tree code Chapter 16.32.042, Tree Preservation and Planting in Residential Zones).

For questions regarding tree protection please call the project arborist:  
Todd Prager & Associates, LLC  
todd@toddprager.com  
971.295.4835

## Attachment 8 – Tree Protection Recommendations

The following recommendations will help to ensure that the trees to be retained are adequately protected:

### **Before Construction Begins**

1. **Notify all contractors of the 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 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 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* plus any resulting fines by government agencies.
  - c. The penalty should be paid to the owner of the property.
2. **Fencing.**
  - a. Establish fencing around each tree or group of trees to be retained.
  - b. The fencing should be put in place before the ground is cleared to protect the trees and the soil around the trees from disturbance.
  - 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 4-foot-high metal fencing secured to the ground with 6-foot-tall 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 until final project approval.
3. **Signage.**
  - a. All tree protection fencing should be provided signage so that all contractors understand the purpose of the fencing.
  - b. Signage should be placed on every fence panel.
  - c. Signage should be weathered and secured to fencing.
  - d. Signage has been included in Attachment 7.

## **During Construction**

### **1. Protection Guidelines Within the Tree Protection Zones.**

- a. 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.
  - b. 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.
  - c. Construction trailers should not to be parked/placed within the tree protection zones.
  - d. No vehicles should be allowed to park within the tree protection zones.
  - e. No activity 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. No grade changes should be allowed within the tree protection zones.
  5. Trees that have woody roots cut should be provided supplemental water during the summer months.
  6. 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.
  7. 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. **Irrigation.** 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. **Drainage.** 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. **Inspect landscape for pests and disease.** Provide for the ongoing inspection and treatment of insect and disease populations that can damage the retained trees and plants.
6. **Fertilization.** 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 9 – Assumptions and Limiting Conditions**

1. Any legal description provided to the consultant is assumed to be correct. The site plans and construction information provided by Studio 3 Architecture, Brand land Use, 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. The purpose of this report is to:
  - a. Make one site visit to inventory existing onsite, right-of-way, and offsite trees.
  - b. Prepare a tree plan to meet City of Milwaukie tree code Chapter 16.32.042, Tree Preservation and Planting in Residential Zones.