CITY OF
Tigard

Urban Forestry
MANUAL

MAY 2019

Appendices updated March 2024

URBAN FORESTRY MANUAL

Effective: May 13, 2019

Appendices 2 through 6 (tree lists) updated March 13, 2024

Introduction

The Urban Forestry Manual consists of administrative rules that implement the details of the urban forestry related code provisions in Title 8, Title 18, and other applicable titles in the Tigard Municipal Code.

The City Manager has the authority to amend the Urban Forestry Manual pursuant to Chapter 2.04 of the Tigard Municipal Code. City staff has the authority to amend appendices in the Urban Forestry Manual without additional action by the City Manager or Council. The City Manager or designee is authorized to administer the Urban Forestry Manual.

Unless stated otherwise, all terms in the Urban Forestry Manual are as defined in Chapter 8.02 of the Tigard Municipal Code.

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Section 1 - Hazard Tree Evaluation and Abatement Procedure

Part 1. Informal Reconciliation:
If interpersonal communication is not feasible or is unsuccessful, the claimant must contact the respondent by sending both a first-class letter and a certified letter to the respondent that, (1) explains the reasons the claimant believes there is a hazard tree on the respondent's property, (2) demonstrates how the claimant's life, limb, or property has the potential to be impacted by said tree, and (3) offers to negotiate a solution that is in compliance with all applicable rules and regulations, either directly or through a third party mediator. The claimant is encouraged to support their claim with documentation by a tree risk assessor. The respondent will have seven calendar days from receipt of the certified letter or 14 calendar days from the postmarked date of the first-class letter, whichever is sooner, to respond to the claimant's proposal in writing by both first-class and certified mail. In order to become eligible for formal reconciliation, the claimant's letter must cite Tigard Municipal Code (TMC) Sections 8.06.020 and 8.06.030, explain the respondent's written response deadlines, and include all of the other required elements listed above.

Part 2. Formal Reconciliation:
If the results of informal reconciliation are not acceptable to the claimant or there has been no response for 21 calendar days or more since the claimant sent the first-class and certified letters, the claimant may seek resolution through formal reconciliation by completing a hazard tree dispute resolution application, paying a deposit for all applicable hazard tree dispute resolution fees, and providing the city all documentation of informal reconciliation including but not limited to any letters to and from the respondent, proof of certified mail delivery, and proof of certified mail receipt (if available).

The city will use all readily available tools and technology when determining the hazard tree owner or responsible party as defined in TMC Chapter 8.02. If the city determines that the claimant's previous correspondence was with the incorrect respondent, then the claimant must complete the previous steps of the hazard tree evaluation and abatement procedure with the correct respondent before proceeding with formal reconciliation. If the claimant or respondent disagrees with the city's determination of the hazard tree owner or responsible party, the claimant or respondent must present a land survey by a professional land surveyor that demonstrates the location of the tree in question in relation to property lines in order for the city to consider a reassignment of the hazard tree owner or responsible party.

Once all the required application materials have been received, the city will gain access to the respondent's property either voluntarily or with a warrant pursuant to TMC Chapter 1.16, conduct a tree risk assessment by a tree risk assessor using the tree risk assessment methodology in Appendix 1 of the Urban Forestry Manual (UFM), determine if the tree is a hazard tree, as defined in TMC Chapter 8.02 and, if necessary, prescribe hazard tree abatement.

If the city determines the tree is a hazard, the city will send both a first-class and certified letter to the respondent, explain that the tree has been determined to be a hazard tree, explain the required hazard tree abatement procedures, and require that hazard tree abatement be completed in a timely manner. The city will also charge the respondent for all applicable hazard tree dispute resolution fees and refund to the claimant any previously deposited hazard tree dispute resolution fees.

If the respondent fails to complete the hazard tree abatement within the required timeframe, the city will gain access to the property either voluntarily or with a warrant, abate the hazard, and charge the respondent for the cost of abatement including administrative costs. The city may place a lien on the property for the cost of abatement, including administrative costs, pursuant to TMC Chapter 1.16.

If the city determines the tree is not a hazard tree, the city will send a first-class and certified letter to both the claimant and respondent explaining that the definition of hazard tree has not been met and close the case.

Section 2 - Street Tree Planting and Maintenance Standards

Part 1. Street Tree Planting Standards:

A. Street trees must be planted in a manner consistent with the tree care industry standards outlined in the most current version of the American National Standards Institute (ANSI) A300 Standards for Tree Care Operations.

B. Street trees must have a minimum caliper of 1.5 inches or equivalent height at the time of planting.

C. Street tree species must be selected from the street tree list in UFM Appendix 2, unless otherwise approved by the City Manager or designee.

D. Street tree species must be appropriate for the planting environment as determined by the City Manager or designee and seek to achieve a balance of the following:
    1. Consistency with previously approved street tree plans given space constraints for roots and branches at maturity;
    2. Compatibility with space constraints for roots and branches at maturity;
    3. Providing adequate species diversity citywide and reasonable resistance to pests and diseases; and
    4. Consideration of the objectives of the current street tree planting proposal.

E. Street trees must be provided adequate spacing from new and existing trees according to the following standards wherever possible:
    1. Street trees categorized as small stature on the street tree list in UFM Appendix 2 or by the City Manager or designee must be spaced no greater than 20 feet on center and not closer than 15 feet on center from other newly planted street trees or any existing tree that has been in the ground for over three years;
    2. Street trees categorized as medium stature on the street tree list in UFM Appendix 2 or by the City Manager or designee must be spaced no greater than 30 feet on center and not closer than 20 feet on center from other newly planted street trees or any existing tree that has been in the ground for over three years;
    3. Street trees categorized as large stature on the street tree list in UFM Appendix 2 or by the City Manager or designee must be spaced no greater than 40 feet on center and not closer than 30 feet on center from other newly planted street trees or any existing tree that has been in the ground for over three years; and
    4. Any tree determined by the City Manager or designee to have a mature spread of less than 20 feet will be considered a small stature tree, and spaced accordingly when used as a street tree.

F. Street trees must be placed according to the following standards:
    1. Street trees categorized as small stature on the street tree list in UFM Appendix 2 or by the City Manager or designee may not be planted with the center of their trunks closer than 2 feet from any hard surface paving;
    2. Street trees categorized as medium stature on the street tree list in UFM Appendix 2 or by the City Manager or designee may not be planted with the center of their trunks closer than 2.5 feet from any hard surface paving;
    3. Street trees categorized as large stature on the street tree list in UFM Appendix 2 or by the City Manager or designee may not be planted with the center of their trunks closer than 3 feet from any hard surface paving;
    4. Not closer than 4 feet on center from any fire hydrant, utility box, or utility pole;

5. Not closer than 2 feet on center from any underground utility;
6. Not closer than 10 feet on center from a street light;
7. Not closer than 20 feet from a street right of way corner as determined by the City Manager or designee. The City Manager or designee may require a greater or lesser corner setback based on an analysis of traffic and pedestrian safety impacts; and
8. Where there are overhead utility lines, the street tree species selected must be of a type which, at full maturity, will not interfere with the lines.

G. Root barriers must be installed according to the manufacturer's specifications when a street tree is planted within 5 feet of any hard surface paving or utility box, or as otherwise required by the City Engineer.

H. Street trees planted prior to the adoption of the most current version of the street tree planting standards will be exempt from the most current version of the street tree planting standards. However, the most current version of the street tree maintenance standards and the most current version of the street tree removal standards will apply.

I. If street tree planting is required by another section of the UFM or TMC, the City Manager or designee may allow for a fee in lieu of planting equivalent to the city's cost to plant a street tree per the standards in UFM Section 2, Part 1 and maintain a street tree per the standards in UFM Section 2, Part 2 for a period of three years after planting. Payment of a fee in lieu of planting will satisfy the street tree planting requirement.

Part 2. Street Tree Maintenance Standards:

A. Street trees must be maintained in a manner consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.

B. Street trees must be maintained in a manner that does not impede public street or sidewalk traffic and meets the following height clearance standards:
1. 8 feet of clearance above public sidewalks;
2. 13 feet of clearance above public local and neighborhood streets;
3. 15 feet of clearance above public collector streets; and
4. 18 feet of clearance above public arterial streets.

C. Street trees must be maintained so as not to become hazard trees as defined in TMC Chapter 8.02.

Section 3 - Street Tree Removal Standards

Part 1. Street Tree Removal Standards:

A. Street trees must be removed in a manner consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.

B. The City Manager or designee will approve the removal of a street tree if any one of the following criteria are met:

1. The tree is a hazard tree as defined in TMC Chapter 8.02 and hazard tree abatement as defined in TMC Chapter 8.02 cannot be completed in a manner that results in tree retention consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations. The tree risk assessment form found in UFM Appendix 1 must be completed by a tree risk assessor and submitted to the city.
2. The tree is dead.
3. The tree is in an advanced state of decline with insufficient live foliage, branches, roots, or other tissue to sustain life. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met.
4. The tree is infested with pests or diseases that if left untreated will cause the tree to die, enter an advanced state of decline, or cause other trees to die or enter an advanced state of decline. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met.
5. The tree has sustained physical damage that will cause the tree to die or enter an advanced state of decline. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met. If the physical damage was caused by a person in violation of TMC Chapter 8.08, the city may take action pursuant to TMC Chapter 1.16.
6. The tree is listed on the nuisance tree list in UFM Appendix 6.
7. The tree location is such that it would not meet all of the street tree planting standards in UFM Section 2, Parts 1E and 1F if it were a newly planted tree.
8. The tree roots are causing damage to paved surfaces, infrastructure, utilities, buildings, or other parts of the built environment.
9. The tree location conflicts with areas of public street widening, construction, or extension as shown in the Transportation System Plan.
10. Tree removal is required for the purposes of an approved building or land use permit, utility or infrastructure installation, or utility or infrastructure repair.
11. The tree is recommended for removal by a designated Fire Marshal for Tualatin Valley Fire and Rescue because it presents a significant fire risk to habitable structures or limits emergency access for rescue workers, and the risk or access issue cannot be abated through pruning or other means that results in tree retention.
12. The tree is part of a stand of trees, and a certified arborist or certified forester determines that thinning of interior trees within the stand of trees is necessary for overall stand health, the thinning will result in no less than 80 percent canopy cover at maturity for the area to be thinned, and that thinning of non-native trees is maximized prior to thinning of native trees.

C. Unless removed for thinning purposes (Part 1.B.12) the City Manager or designee will condition the removal of a street tree upon the planting of a replacement tree in accordance with the Street Tree Planting Standards in UFM Section 2, Part 1.
D. If the Street Tree Planting Standards in UFM Section 2, Part 1 preclude replanting within the same right of way abutting on, fronting on, or adjacent to the property as the tree was removed or on private property within 6 feet of the same right of way as the tree that was removed, the applicant will be exempt from planting a replacement tree.

Section 4 - Median Tree Planting and Maintenance Standards

Part 1. Median Tree Planting Standards:

A. Median trees must be planted in a manner consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.

B. Median trees must have a minimum caliper of 1.5 inches or equivalent height at the time of planting.

C. Median tree species must be from the street tree list in UFM Appendix 2, unless otherwise approved by the City Manager or designee.

D. Median tree species must be appropriate for the planting environment as determined by the City Manager or designee and seek to achieve a balance of the following:
   1. Consistency with previously approved median tree plans given space constraints for roots and branches at maturity;
   2. Compatibility with space constraints for roots and branches at maturity;
   3. Providing adequate species diversity citywide and reasonable resistance to pests and diseases; and
   4. Consideration of the objectives of the current median tree planting proposal.

E. Median trees must be provided adequate spacing from new and existing trees according to the following standards wherever possible:
   1. Median trees categorized as small stature on the street tree list in UFM Appendix 2 or by the City Manager or designee must be spaced no greater than 20 feet on center and not closer than 15 feet on center from other newly planted median trees or any existing tree that has been in the ground for over three years;
   2. Median trees categorized as medium stature on the street tree list in UFM Appendix 2 or by the City Manager or designee must be spaced no greater than 30 feet on center and not closer than 20 feet on center from other newly planted median trees or any existing tree that has been in the ground for over three years;
   3. Median trees categorized as large stature on the street tree list in UFM Appendix 2 or by the City Manager or designee must be spaced no greater than 40 feet on center and not closer than 30 feet on center from other newly planted median trees or any existing tree that has been in the ground for over three years; and
   4. Any tree determined by the City Manager or designee to have a mature spread of less than 20 feet will be considered a small stature tree, and spaced accordingly when used as a median tree.

F. Median trees must be placed according to the following standards:
   1. Median trees categorized as small stature on the street tree list in UFM Appendix 2 or by the City Manager or designee may not be planted with the center of their trunks closer than 2 feet from any hard surface paving;
   2. Median trees categorized as medium stature on the street tree list in UFM Appendix 2 or by the City Manager or designee may not be planted with the center of their trunks closer than 2.5 feet from any hard surface paving;
   3. Median trees categorized as large stature on the street tree list in UFM Appendix 2 or by the City Manager or designee may not be planted with the center of their trunks closer than 3 feet from any hard surface paving;
   4. Not closer than 4 feet on center from any fire hydrant, utility box, or utility pole;

5. Not closer than 2 feet on center from any underground utility;
6. Not closer than 10 feet on center from a street light;
7. Not closer than 20 feet from a street right of way corner as determined by the City Manager or designee. The City Manager or designee may require a greater or lesser corner setback based on an analysis of traffic and pedestrian safety impacts;
8. Where there are overhead utility lines, the median tree species selected must be of a type which, at full maturity, will not interfere with the lines; and
9. Any other standards found by the City Manager or designee to be relevant in order to protect public safety and public or private property.

G. Root barriers must be installed according to the manufacturer's specifications when a street tree is planted within 5 feet of any hard surface paving or utility box, or as otherwise required by the City Engineer.

H. Median trees planted prior to the adoption of the most current version of the Median Tree Planting Standards will be exempt from the most current version of the Median Tree Planting Standards. However, the most current version of the Median Tree Maintenance Standards and the most current version of the Median Tree Removal Standards will apply.

I. If median tree planting is required by another section of the UFM or TMC, the City Manager or designee may allow for a fee in lieu of planting equivalent to the city's cost to plant a median tree per the standards in UFM Section 4, Part 1 and maintain a median tree per the standards in UFM Section 4, Part 2 for a period of three years after planting. Payment of a fee in lieu of planting will satisfy the median tree planting requirement.

Part 2. Median Tree Maintenance Standards:

A. Median trees must be maintained in a manner consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.

B. Median trees must be maintained in a manner that does not impede public street or sidewalk traffic and meets the following height clearance standards:
1. 8 feet of clearance above public sidewalks;
2. 13 feet of clearance above public local and neighborhood streets;
3. 15 feet of clearance above public collector streets; and
4. 18 feet of clearance above public arterial streets.

C. Median trees must be maintained so as not to become hazard trees as defined in TMC Chapter 8.02.

Section 5 - Median Tree Removal Standards

Part 1. Median Tree Removal Standards:

A. Median trees must be removed in a manner consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.

B. The City Manager or designee will approve the removal of a median tree if any one of the following criteria are met:

1. The tree is a hazard tree as defined in TMC Chapter 8.02 and hazard tree abatement as defined in TMC Chapter 8.02 cannot be completed in a manner that results in tree retention consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations. The tree risk assessment form found in UFM Appendix 1 must be completed by a tree risk assessor and submitted to the city.
2. The tree is dead.
3. The tree is in an advanced state of decline with insufficient live foliage, branches, roots, or other tissue to sustain life. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met.
4. The tree is infested with pests or diseases that if left untreated will cause the tree to die, enter an advanced state of decline, or cause other trees to die or enter an advanced state of decline. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met.
5. The tree has sustained physical damage that will cause the tree to die or enter an advanced state of decline. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met. If the physical damage was caused by a person in violation of TMC Chapter 8.08, the city may take action pursuant to TMC Chapter 1.16.
6. The tree is listed on the nuisance tree list in UFM Appendix 6.
7. The tree location is such that it would not meet all of the median tree planting standards in UFM Section 4, Parts 1E and 1F if it were a newly planted tree.
8. The tree roots are causing damage to paved surfaces, infrastructure, utilities, buildings, or other parts of the built environment.
9. The tree location conflicts with areas of public street widening, construction, or extension as shown in the Transportation System Plan.
10. Tree removal is required for the purposes of an approved building or land use permit, utility or infrastructure installation, or utility or infrastructure repair.
11. The tree is recommended for removal by a designated Fire Marshal for Tualatin Valley Fire and Rescue because it presents a significant fire risk to habitable structures or limits emergency access for rescue workers, and the risk or access issue cannot be abated through pruning or other means that results in tree retention.
12. The tree is part of a stand of trees, and a certified arborist or certified forester determines that thinning of interior trees within the stand of trees is necessary for overall stand health, the thinning will result in no less than 80 percent canopy cover at maturity for the area to be thinned, and that thinning of non-native trees is maximized prior to thinning of native trees.

C. Unless removed for thinning purposes (Part 1.B.12) the City Manager or designee will condition the removal of a median tree upon the planting of a replacement tree within the same median as the tree was removed in accordance with the Median Tree Planting Standards in UFM Section 4, Part 1.
D. If the Median Tree Planting Standards in UFM Section 4, Part 1 preclude replanting within the same median as the tree was removed, the applicant will be exempt from planting a replacement tree.

Section 6 - Sensitive Lands Tree Removal and Replacement Standards

Part 1. Sensitive Lands Tree Removal Standards:

A. Native trees in sensitive lands must be removed in a manner consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.

B. The City Manager or designee will approve the removal of a native tree in sensitive lands if any one of the following criteria are met:

1. The tree is a hazard tree as defined in TMC Chapter 8.02 and hazard tree abatement as defined in TMC Chapter 8.02 cannot be completed in a manner that results in tree retention consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations. The tree risk assessment form found in UFM Appendix 1 must be completed by a tree risk assessor and submitted to the city.
2. The tree is dead.
3. The tree is in an advanced state of decline with insufficient live foliage, branches, roots, or other tissue to sustain life. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met.
4. The tree is infested with pests or diseases that if left untreated will cause the tree to die, enter an advanced state of decline, or cause other trees to die or enter an advanced state of decline. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met.
5. The tree has sustained physical damage that will cause the tree to die or enter an advanced state of decline. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met. If the physical damage was caused by a person in violation of TMC Chapter 8.10, the city may take action pursuant to TMC Chapter 1.16.
6. The tree is listed on the nuisance tree list in UFM Appendix 6.
7. The tree roots are causing damage to paved surfaces, infrastructure, utilities, buildings, or other parts of the built environment.
8. The tree location conflicts with areas of public street widening, construction, or extension as shown in the Transportation System Plan.
9. Tree removal is required for the purposes of an approved building or land use permit, utility or infrastructure installation, or utility or infrastructure repair.
10. The tree is recommended for removal by a designated Fire Marshal for Tualatin Valley Fire and Rescue because it presents a significant fire risk to habitable structures or limits emergency access for rescue workers, and the risk or access issue cannot be abated through pruning or other means that results in tree retention.
11. A certified arborist or certified forester determines that thinning of interior trees within a stand of trees is necessary for overall stand health, the thinning will result in no less than 80 percent canopy cover at maturity for the area to be thinned, and that thinning of non-native trees is maximized prior to thinning of native trees.

C. Unless removed for thinning purposes (Part 1.B.10) the City Manager or designee will condition the removal of each tree in sensitive lands upon the planting of a replacement tree in accordance with the Sensitive Lands Tree Replacement Standards in UFM Section 6, Part 2.

D. If the Sensitive Lands Tree Replacement Standards in UFM Section 6, Part 2 preclude replanting within the same property as the tree that was removed, the applicant will be exempt from planting a replacement tree.

Part 2. Sensitive Lands Tree Replacement Standards:

A. Replacement trees must be planted in a manner consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.
B. The minimum size of a replacement tree must be 2 feet in height (from the top of the root ball) or equivalent to a 1-gallon container size.
C. Replacement trees must be selected from the native tree list in UFM Appendix 5.
D. The location of replacement trees must be as follows:
    1. As close as practicable to the location of the tree that was removed provided the location complies with the other standards in this section;
    2. No closer than 10 feet on center from newly planted or existing trees;
    3. Trees categorized as small stature on the native tree list in UFM Appendix 5 or by the City Manager or designee must be spaced no closer than 15 feet from the face of habitable buildings;
    4. Trees categorized as medium stature on the native tree list in UFM Appendix 5 or by the City Manager or designee must be spaced no closer than 20 feet from the face of habitable buildings;
    5. Trees categorized as large stature on the native tree list in UFM Appendix 5 or by the City Manager or designee must be spaced no closer than 30 feet from the face of habitable buildings;
    6. Trees categorized as small stature on the native tree list in UFM Appendix 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2 feet from any hard surface paving;
    7. Trees categorized as medium stature on the native tree list in UFM Appendix 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2.5 feet from any hard surface paving;
    8. Trees categorized as large stature on the native tree list in UFM Appendix 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 3 feet from any hard surface paving; and
    9. Where there are overhead utility lines, the tree species selected must be of a type which, at full maturity, will not interfere with the lines.
E. The City Manager or designee may allow for a fee in lieu of planting equivalent to the city's cost to plant a tree in sensitive lands per the standards in this Section and maintain a tree in sensitive lands per the standards in TMC Section 8.10.030 for a period of three years after planting. Payment of a fee in lieu of planting will satisfy the sensitive lands tree replacement requirement.

Section 7 - Development Tree Removal and Replacement Standards

Part 1. Development Tree Removal Standards:

A. Trees subject to the requirements of TMC Chapter 8.12 must be removed in a manner consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.

B. The City Manager or designee will approve the removal of trees subject to the requirements of TMC Chapter 8.12 if any one of the following criteria are met:

1. The tree is a hazard tree as defined in TMC Chapter 8.02 and hazard tree abatement as defined in TMC Chapter 8.02 cannot be completed in a manner that results in tree retention consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations. The tree risk assessment form found in UFM Appendix 1 must be completed by a tree risk assessor and submitted to the city.
2. The tree is dead.
3. The tree is in an advanced state of decline with insufficient live foliage, branches, roots, or other tissue to sustain life. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met.
4. The tree is infested with pests or diseases that if left untreated will cause the tree to die, enter an advanced state of decline, or cause other trees to die or enter an advanced state of decline. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met.
5. The tree has sustained physical damage that will cause the tree to die or enter an advanced state of decline. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met. If the physical damage was caused by a person in violation of TMC Chapter 8.12, the city may take action pursuant to TMC Chapter 1.16.
6. The tree is listed in the nuisance tree list in UFM Appendix 6.
7. The tree roots are causing damage to paved surfaces, infrastructure, utilities, buildings, or other parts of the built environment.
8. The tree location conflicts with areas of public street widening, construction, or extension as shown in the Transportation System Plan.
9. Tree removal is required for the purposes of an approved building or land use permit, utility or infrastructure installation, or utility or infrastructure repair.
10. The tree is recommended for removal by a designated Fire Marshal for Tualatin Valley Fire and Rescue because it presents a significant fire risk to habitable structures or limits emergency access for rescue workers, and the risk or access issue cannot be abated through pruning or other means that results in tree retention.
11. The tree is part of a stand of trees, and a certified arborist or certified forester determines that thinning of interior trees within the stand of trees is necessary for overall stand health, the thinning will result in no less than 80 percent canopy cover at maturity for the area to be thinned, and that thinning of non-native trees is maximized prior to thinning of native trees.

C. Unless removed for thinning purposes (Part 1.B.11) the City Manager or designee will condition the removal of each tree upon the planting of a replacement tree in accordance with the Development Tree Replacement Standards in UFM Section 7, Part 2.
D. If the Development Tree Replacement Standards in UFM Section 7, Part 2 preclude replanting within the same property as the tree that was removed, the applicant will be exempt from planting a replacement tree.

Part 2. Development Tree Replacement Standards:

A. Replacement trees must be planted in a manner consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.
B. The replacement tree must be located so as to replace the function of the tree that was removed. For example, trees removed from parking lots must be replaced in parking lots. If planting in the same location would not comply with the other standards in this section, the replacement tree must be planted as close as practicable to the tree that was removed in compliance with the other standards in this section.
C. The replacement species must be the same stature or greater (at maturity) as the tree that was removed. If planting the same stature or greater tree would not comply with the other standards in this section, the replacement tree must be the most similar stature practicable as the tree that was removed in compliance with the other standards in this section.
D. If the tree that was removed was part of a stand of trees, then the following standards apply to the replacement tree:
    1. The replacement tree must be selected from the native tree list in UFM Appendix 5 unless otherwise approved by the City Manager or designee;
    2. The minimum size of the replacement tree must be 2 feet in height (from the top of the root ball) or equivalent to a 1-gallon container size; and
    3. The replacement tree must be located as follows:
        a. No closer than 10 feet on center from newly planted or existing trees;
        b. Trees categorized as small stature on the native tree list in UFM Appendix 5 or by the City Manager or designee must be spaced no closer than 15 feet from the face of habitable buildings;
        c. Trees categorized as medium stature on the native tree list in UFM Appendix 5 or by the City Manager or designee must be spaced no closer than 20 feet from the face of habitable buildings;
        d. Trees categorized as large stature on the native tree list in UFM Appendix 5 or by the City Manager or designee must be spaced no closer than 30 feet from the face of habitable buildings;
        e. Trees categorized as small stature on the native tree list in UFM Appendix 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2 feet from any hard surface paving;
        f. Trees categorized as medium stature on the native tree list in UFM Appendix 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2.5 feet from any hard surface paving;
        g. Trees categorized as large stature on the native tree list in UFM Appendix 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 3 feet from any hard surface paving; and
        h. Where there are overhead utility lines, the tree species selected must be of a type which, at full maturity, will not interfere with the lines.

E. If the tree that was removed was an open grown tree, then the following standards apply to the replacement tree:
    1. The replacement tree must be selected from any of the tree lists in UFM Appendices 2 through 5 unless otherwise approved by the City Manager or designee;
    2. The minimum size of the replacement tree must be 1.5-inch caliper or equivalent height at the time of planting; and
    3. The replacement tree must be located as follows:
        a. Trees categorized as small stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee must be spaced no closer than 15 feet on center from other newly planted or existing trees and 10 feet from the face of habitable buildings;
        b. Trees categorized as medium stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee must be spaced no closer than 20 feet on center from other newly planted or existing trees and 15 feet from the face of habitable buildings;
        c. Trees categorized as large stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee must be spaced no closer than 30 feet on center from other newly planted or existing trees and 20 feet from the face of habitable buildings;
        d. Trees determined by the City Manager or designee to have a mature spread of less than 20 feet will be considered small stature, and must be spaced no closer than 15 feet on center from other newly planted or existing trees and 10 feet from the face of habitable buildings;
        e. Trees categorized as small stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2 feet from any hard surface paving;
        f. Trees categorized as medium stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2.5 feet from any hard surface paving;
        g. Trees categorized as large stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 3 feet from any hard surface paving; and
        h. Where there are overhead utility lines, the tree species selected must be of a type which, at full maturity, will not interfere with the lines.

F. The City Manager or designee may allow for a fee in lieu of planting equivalent to the city's cost to plant a tree per the standards in this Section and maintain a tree per the standards in TMC Section 8.12.030 for a period of three years after planting. Payment of a fee in lieu of planting will satisfy the development tree replacement requirement.

Section 8 - Urban Forestry Fund Tree Removal and Replacement Standards

Part 1. Urban Forestry Fund Tree Removal Standards:

A. Trees subject to the requirements of TMC Chapter 8.14 must be removed in a manner consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.

B. The City Manager or designee will approve the removal of trees subject to the requirements of TMC Chapter 8.14 if any one of the following criteria are met:

1. The tree is a hazard tree as defined in TMC Chapter 8.02 and hazard tree abatement as defined in TMC Chapter 8.02 cannot be completed in a manner that results in tree retention consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations. The tree risk assessment form found in UFM Appendix 1 must be completed by a tree risk assessor and submitted to the city.
2. The tree is dead.
3. The tree is in an advanced state of decline with insufficient live foliage, branches, roots, or other tissue to sustain life. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met.
4. The tree is infested with pests or diseases that if left untreated will cause the tree to die, enter an advanced state of decline, or cause other trees to die or enter an advanced state of decline. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met.
5. The tree has sustained physical damage that will cause the tree to die or enter an advanced state of decline. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met. If the physical damage was caused by a person in violation of TMC Chapter 8.14, the city may take action pursuant to TMC Chapter 1.16.
6. The tree is listed in the nuisance tree list in UFM Appendix 6.
7. The tree roots are causing damage to paved surfaces, infrastructure, utilities, buildings, or other parts of the built environment.
8. The tree location conflicts with areas of public street widening, construction, or extension as shown in the Transportation System Plan.
9. Tree removal is required for the purposes of an approved building or land use permit, utility or infrastructure installation, or utility or infrastructure repair.
10. The tree is recommended for removal by a designated Fire Marshal for Tualatin Valley Fire and Rescue because it presents a significant fire risk to habitable structures or limits emergency access for rescue workers, and the risk or access issue cannot be abated through pruning or other means that results in tree retention.
11. The tree is part of a stand of trees, and a certified arborist or certified forester determines that thinning of interior trees within the stand of trees is necessary for overall stand health, the thinning will result in no less than 80 percent canopy cover at maturity for the area to be thinned, and that thinning of non-native trees is maximized prior to thinning of native trees.

C. Unless removed for thinning purposes (Part 1.B.11) the City Manager or designee will condition the removal of each tree upon the planting of a replacement tree in accordance with the Urban Forestry Fund Tree Replacement Standards in UFM Section 8, Part 2.
D. If the Urban Forestry Fund Tree Replacement Standards in UFM Section 8, Part 2 preclude replanting within the same property as the tree that was removed, the applicant will be exempt from planting a replacement tree.

Part 2. Urban Forestry Fund Tree Replacement Standards:

A. Replacement trees must be planted in a manner consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.
B. The replacement species must be the same stature or greater (at maturity) as the tree that was removed. If planting the same stature or greater tree would not comply with the other standards in this section, the replacement tree must be the most similar stature practicable as the tree that was removed in compliance with the other standards in this section.
C. If the tree that was removed was part of a stand of trees, then the following standards apply to the replacement tree:
    1. The replacement tree must be selected from the native tree list in UFM Appendix 5 unless otherwise approved by the City Manager or designee;
    2. The minimum size of the replacement tree must be 2 feet in height (from the top of the root ball) or equivalent to a 1-gallon container size; and
    3. The replacement tree must be located as follows:
        a. No closer than 10 feet on center from newly planted or existing trees;
        b. Trees categorized as small stature on the native tree list in UFM Appendix 5 or by the City Manager or designee must be spaced no closer than 15 feet from the face of habitable buildings;
        c. Trees categorized as medium stature on the native tree list in UFM Appendix 5 by the City Manager or designee must be spaced no closer than 20 feet from the face of habitable buildings;
        d. Trees categorized as large stature on the native tree list in UFM Appendix 5 or by the City Manager or designee must be spaced no closer than 30 feet from the face of habitable buildings;
        e. Trees categorized as small stature on the native tree list in UFM Appendix 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2 feet from any hard surface paving;
        f. Trees categorized as medium stature on the native tree list in UFM Appendix 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2.5 feet from any hard surface paving;
        g. Trees categorized as large stature on the native tree list in UFM Appendix 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 3 feet from any hard surface paving; and
        h. Where there are overhead utility lines, the tree species selected must be of a type which, at full maturity, will not interfere with the lines.
D. If the tree that was removed was an open grown tree, then the following standards apply to the replacement tree:
    1. The replacement tree must be selected from any of the tree lists in UFM Appendices 2 through 5 unless otherwise approved by the City Manager or designee;

2. The minimum size of the replacement tree must be 1.5-inch caliper or equivalent height at the time of planting; and
3. The replacement tree must be located as follows:
    a. Trees categorized as small stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee must be spaced no closer than 15 feet on center from other newly planted or existing trees and 10 feet from the face of habitable buildings;
    b. Trees categorized as medium stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee must be spaced no closer than 20 feet on center from other newly planted or existing trees and 15 feet from the face of habitable buildings;
    c. Trees categorized as large stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee must be spaced no closer than 30 feet on center from other newly planted or existing trees and 20 feet from the face of habitable buildings;
    d. Trees determined by the City Manager or designee to have a mature spread of less than 20 feet will be considered small stature, and must be spaced no closer than 15 feet on center from other newly planted or existing trees and 10 feet from the face of habitable buildings;
    e. Trees categorized as small stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2 feet from any hard surface paving;
    f. Trees categorized as medium stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2.5 feet from any hard surface paving;
    g. Trees categorized as large stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 3 feet from any hard surface paving; and
    h. Where there are overhead utility lines, the tree species selected must be of a type which, at full maturity, will not interfere with the lines.

E. The City Manager or designee may allow for a fee in lieu of planting equivalent to the city's cost to plant a tree per the standards in this section and maintain a tree per the standards in TMC Section 8.14.030 for a period of three years after planting. Payment of a fee in lieu of planting will satisfy the urban forestry fund tree replacement requirement.

Section 9 - Heritage Tree Designation Removal Standards

Part 1. Heritage Tree Designation Removal Standards:

A. Heritage trees subject to the requirements of TMC Chapter 8.16 must be removed in a manner consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.

B. The City Manager or designee will approve the removal of heritage tree designation if any one of the following criteria are met for a designated heritage tree:

1. The heritage tree is a hazard tree as defined in TMC Chapter 8.02 and hazard tree abatement as defined in TMC Chapter 8.02 cannot be completed in a manner that results in tree retention consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations. The tree risk assessment form found in UFM Appendix 1 must be completed by a tree risk assessor and submitted to the city.
2. The heritage tree is dead.
3. The heritage tree is in an advanced state of decline with insufficient live foliage, branches, roots or other tissue to sustain life. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met.
4. The heritage tree has sustained physical damage that will cause the tree to die or enter an advanced state of decline. The City Manager or designee may require additional documentation from a certified arborist to demonstrate that this criterion is met. If the physical damage was caused by a person in violation of TMC Chapter 8.16, the city may take action pursuant to TMC Chapter 1.16.
5. The tree is recommended for removal by a designated Fire Marshal for Tualatin Valley Fire and Rescue because it presents a significant fire risk to habitable structures or limits emergency access for rescue workers, and the risk or access issue cannot be abated through pruning or other means that results in tree retention.
6. The heritage tree is part of a stand of heritage trees, and a certified arborist or certified forester determines that thinning of interior heritage trees within the stand of heritage trees is necessary for overall stand health, the thinning will result in no less than 80 percent canopy cover at maturity for the area to be thinned, and that thinning of non-native heritage trees is maximized prior to thinning of native heritage trees.

C. Replacement of heritage trees is not required unless a heritage tree is also subject to other provisions of the TMC that require replacement.

Section 10 - Urban Forestry Plan Standards

Part 1. Urban Forestry Plan – Tree Preservation and Removal Site Plan Requirements:

A. The applicant must provide one standard size D (24" x 36") plan set, one reduced ledger size (11" x 17") plan set, and one electronic copy in PDF format, submitted on digital storage media. The plan set must include all items in Part 1.B-O. When required for clarity, the development impact area information in Part 1.I may be detailed separately on multiple plan sheets provided that all of the remaining items in Part 1 are included for reference. "Development impact area" is defined in Chapter 18.30, Definitions of the Community Development Code of the City of Tigard (TCDC).

B. Date of drawing or last revision.

C. North arrow.

D. Bar scale as follows (unless otherwise approved by the City Manager or designee):
   1. Less than 1.0 acres: 1" = 10'
   2. 1.0 - 5.0 acres: 1" = 20'
   3. 5.0 – 20.0 acres: 1" = 50'
   4. Over 20.0 acres: 1" = 100'.

E. Site address or assessor's parcel number.

F. The location of existing and proposed property lines.

G. Location of existing and proposed topographic lines at 1-foot contours unless otherwise approved.

H. The location and type of sensitive lands areas.

I. Proposed activities within the development impact area, including but not limited to:
   1. Construction of structures and walls;
   2. Paving and graveling;
   3. Utility and irrigation installation;
   4. Construction parking and construction equipment storage;
   5. Landscaping;
   6. Grading and filling;
   7. Stockpiling;
   8. Demolition and tree removal;
   9. Trenching and boring; and
   10. Any other activities that require excavation or soil disturbance.

J. The trunk locations, driplines, assigned numbers, and "X" marks when applicable (indicating trees proposed for removal) for the following trees within the development impact area and within 25 feet of the development impact area:
   1. Trees greater than or equal to 6-inch diameter at breast height (DBH);
   2. Trees less than 6-inch DBH that are identified on the native tree list in UFM Appendix 5; and
   3. Other trees that require a permit to remove by Title 8 and are less than 6-inch DBH.

K. The trunk locations, driplines, and assigned numbers for the following trees that are not within the development impact area:
   1. Open grown trees greater than or equal to 6-inch DBH; and
   2. Other trees that require a permit to remove by Title 8 and are less than 6-inch DBH.

L. The driplines of stand grown trees greater than or equal to 6-inch DBH that form a contiguous tree canopy. The driplines may be delineated at the outer edge of the stand. Each stand must be assigned a number.
M. The location and type of proposed tree protection fencing. If the location of the tree protection fencing will be phased, indicate the location of the tree protection fencing for each corresponding phase. Tree protection fencing must be minimum 5-foot tall metal unless otherwise approved by the City Manager or designee.
N. Any supplemental tree preservation specifications consistent with tree care industry standards that the project arborist or landscape architect has determined are necessary for the continued viability of trees identified for preservation.
O. A signature of approval and statement from the project arborist or landscape architect, attesting that the tree preservation and removal site plan meets all of the requirements in UFM Section 10, Part 1.

Part 2. Urban Forestry Plan – Tree Canopy Site Plan Requirements:

A. The applicant must provide one standard size D (24" x 36") plan set, one reduced ledger size (11" x 17") plan set, and one electronic copy in PDF format, submitted on digital storage media. The plan must include all items in Part 2.B-O.
B. Date of drawing or last revision.
C. North arrow.
D. Bar scale as follows (unless otherwise approved by the City Manager or designee):
    1. less than 1.0 acres: 1" = 10'
    2. 1.0 - 5.0 acres: 1" = 20'
    3. 5.0 – 20.0 acres: 1" = 50'
    4. Over 20.0 acres: 1" = 100'.
E. Site address or assessor's parcel number.
F. The location of proposed property lines.
G. The location of proposed building footprints, utilities and irrigation, streets and other paved areas.
H. The trunk locations, driplines and assigned numbers for trees to be preserved in Parts 1.J and 1.K. Each tree on both the tree preservation and removal site plan and tree canopy site plan must be assigned the same number on both plans.
I. The dripline locations of stand grown trees proposed for preservation greater than or equal to 6-inch DBH that form a contiguous tree canopy. The dripline may be delineated at the outer edge of the stand. Each stand must be assigned a number. Each stand on both the tree preservation and removal site plan and tree canopy site plan must be assigned the same number on both plans.
J. The location of existing or potential areas of tree growth limiting soils due to compaction, drainage, fertility, pH, contamination, or other factors.
K. Methods for improving areas of tree growth limiting soils if tree planting is proposed in those locations.
L. The location, species, caliper (in inches for broadleaf) or height (in feet for coniferous), assigned numbers, and depiction of the mature tree canopy (in feet as identified on any of the tree lists in UFM Appendices 2 through 5 by the City Manager or designee) for all trees to be planted and maintained as open grown trees. The minimum size for all trees planted and maintained as open grown trees is 1.5-inch caliper or equivalent height at the time of planting. Open grown trees must be selected from any of the tree lists in UFM Appendices 2 through 5 unless otherwise approved by the City Manager or designee. If an open grown tree approved for planting is not identified on any of the tree lists in UFM Appendices 2 through 5, then the project arborist or landscape

architect must determine the average mature tree canopy spread using available scientific literature for review and approval by the City Manager or designee. The City Manager or designee may consider trees less than 6-inch DBH as equivalent to newly planted trees if they meet all applicable species, size, condition, and location requirements in this section. Overall, the selection of open grown trees must result in a reasonable amount of diversity for the site. Open grown trees must be located as follows:

1. Trees categorized as small stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee must be spaced no closer than 15 feet on center from other newly planted or existing trees and 10 feet from the face of habitable buildings. The setback from the face of habitable buildings may be reduced if approved by the City Manager or designee.
2. Trees categorized as medium stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee must be spaced no closer than 20 feet on center from other newly planted or existing trees and 15 feet from the face of habitable buildings. The setback from the face of habitable buildings may be reduced if approved by the City Manager or designee.
3. Trees categorized as large stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee must be spaced no closer than 30 feet on center from other newly planted or existing trees and 20 feet from the face of habitable buildings. The setback from the face of habitable buildings may be reduced if approved by the City Manager or designee.
4. Trees determined by the City Manager or designee to have a mature spread of less than 20 feet will be considered small stature, and must be spaced no closer than 15 feet on center from other newly planted or existing trees and 10 feet from the face of habitable buildings. The setback from the face of habitable buildings may be reduced if approved by the City Manager or designee.
5. Trees categorized as small stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2 feet from any hard surface paving.
6. Trees categorized as medium stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2 ½ feet from any hard surface paving.
7. Trees categorized as large stature on any of the tree lists in UFM Appendices 2 through 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 3 feet from any hard surface paving.
8. Where there are overhead utility lines, the tree species selected must be of a type which, at full maturity, will not interfere with the lines.
9. Where there is existing mature tree canopy or other areas with significant shade, the species selected must be an understory tree according to available scientific literature. However, understory trees must only be planted when the planting of non-understory trees is precluded due to site constraints.

M. The location, species, size (in height or container size), assigned number, and depiction of the mature tree canopy dripline as identified in the native tree list in UFM Appendix 5 (delineated at the outer edge of the stand) for all trees to be planted and maintained as stand grown trees. The species of trees planted and maintained as stand grown trees must be selected from the native tree list in UFM Appendix 5. The depiction of the mature tree canopy dripline must be consistent with dimensions in the native tree list. The minimum size of stand grown trees must be 2 feet in height

(from the top of the root ball) or equivalent to a 1-gallon container size. The City Manager or designee may consider trees less than 6-inch DBH as equivalent to newly planted trees if they meet all applicable species, size, condition, and location requirements in this section. Overall, the selection of stand grown trees must result in a reasonable amount of diversity for the site. Stand grown trees must be located as follows:

1. No closer than an average of 10 feet on center from newly planted or existing trees.
2. No further than an average of 20 feet on center from newly planted or existing trees.
3. Trees categorized as small stature on the native tree list in UFM Appendix 5 or by the City Manager or designee must be spaced no closer than 15 feet from the face of habitable buildings. The setback from the face of habitable buildings may be reduced if approved by the City Manager or designee.
4. Trees categorized as medium stature on the native tree list in UFM Appendix 5 or by the City Manager or designee must be spaced no closer than 20 feet from the face of habitable buildings. The setback from the face of habitable buildings may be reduced if approved by the City Manager or designee.
5. Trees categorized as large stature on the native tree list in UFM Appendix 5 or by the City Manager or designee must be spaced no closer than 30 feet from the face of habitable buildings. The setback from the face of habitable buildings may be reduced if approved by the City Manager or designee.
6. Trees categorized as small stature on the native tree list in UFM Appendix 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2 feet from any hard surface paving.
7. Trees categorized as medium stature on the native tree list in UFM Appendix 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 2 ½ feet from any hard surface paving.
8. Trees categorized as large stature on the native tree list in UFM Appendix 5 or by the City Manager or designee may not be planted with the center of their trunks closer than 3 feet from any hard surface paving.
9. Where there are overhead utility lines, the tree species selected must be of a type which, at full maturity, will not interfere with the lines.
10. Where there is existing mature tree canopy or other areas with significant shade, the species selected must be an understory tree according to available scientific literature. However, understory trees must only be planted when the planting of non-understory trees is precluded due to space constraints.

N. Any supplemental specifications that the project arborist or landscape architect has determined are necessary for the viability of trees proposed for planting.
O. A signature of approval and statement from the project arborist or landscape architect, attesting that the tree canopy site plan meets all of the requirements in UFM Section 10, Part 2.

Part 3. Urban Forestry Plan – Supplemental Report Requirements:

A. The supplemental report must be provided by the project arborist or landscape architect in paper and PDF format, and include all items in Part 3.B-P.
B. Date of the report.
C. The name, address, telephone number, email address, and ISA certified arborist number of the project arborist or stamp and registration number of the project landscape architect.
D. The following inventory data in table or other such organized format corresponding to each tree in Parts 1.J and 1.K in the tree preservation and removal site plan:

1. The assigned tree number;
2. The genus, species and common name;
3. DBH (in inches);
4. Average tree canopy area (in square feet), calculated as (average tree canopy spread/2)^2 x π;
5. Open grown tree or stand grown tree;
6. Heritage tree? (Y or N);
7. Numerical condition rating (0-3) as follows:

Factors considered						
Condition rating	**Overall vigor**	**Tree canopy density**	**Amount of deadwood**	**History of failure**	**Pests**	**Extent of decay**
0	Dead to severe decline	<30%	Large; major scaffold branches	More than one scaffold	Infested	Major; conks and cavities
1	Declining	30-60%	Twig and branch dieback	Scaffold branches	Infested	One to a few conks; small cavities
2	Average	60-90%	Small twigs	Small branches	Minor	Present only at pruning wounds
3	Good to excellent	90-100%	Little or none	None	Minor to Insignificant	Absent to present only at pruning wounds

8. Numerical suitability for preservation rating (0-3) as follows:

Rating	Considerations
0	The tree is a hazard tree as defined in TMC Chapter 8.02 and hazard tree abatement as defined in TMC Chapter 8.02 cannot be completed in a manner that results in tree retention consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.
1	The tree is dead, in severe decline or declining but may be retained if desirable for wildlife or other benefits because it is not considered a hazard tree or hazard tree abatement could be performed.
2	The tree has average health or structural stability that could be alleviated with treatment; the tree will be less resilient to development impacts and will require more frequent management and monitoring after development than a tree rated as a "3".
3	The tree has good to excellent health and structural stability; the tree will be more resilient to development impacts, and will require less frequent management and monitoring after development than a tree rated as a "2".

9. Proposed for preservation? (Y or N); and
10. Additional comments.

E. The following inventory data in table or other such organized format corresponding to each existing stand in the tree preservation and removal site plan:
   1. The assigned stand number;
   2. The genus, species and common name of the tree species estimated to be dominant in the stand;

3. The genus, species and common name of the tree species estimated to be the second and third most common in the stand;
4. The estimated average DBH (in inches) of the dominant tree species in the stand;
5. The estimated average DBH (in inches) of both the second and third most common tree species in the stand;
6. The estimated average condition rating (per Part 3.D.7) of the dominant tree species in the stand;
7. The estimated average condition rating (per Part 3.D.7) of both the second and third most common tree species in the stand;
8. The total on site tree canopy area (in square feet) of the stand;
9. Numerical suitability for preservation rating of the stand (0-3) as follows:

Rating	Considerations
0	Nuisance trees are the dominant species in the stand or continued viability of the stand is unlikely due to pests, diseases, competition from nuisance tree or plant species, hydrologic changes or other factors.
1	The stand requires a currently cost prohibitive level of investment and management of pests, diseases, nuisance tree or plant species, hydrology or other factors to become viable.
2	The stand is viable but requires more frequent management and monitoring of pests, diseases, nuisance tree or plant species, hydrology or other factors for continued viability than a stand rated as a "3".
3	The stand is viable and requires less frequent management and monitoring of pests, diseases, nuisance tree or plant species, hydrology or other factors for continued viability than a stand rated as a "2".

10. The total on site tree canopy area (in square feet) of the stand proposed for preservation; and
11. Additional comments.

F. Supplemental specifications regarding the location and type of proposed tree protection fencing. If the location of the tree protection fencing will be phased, indicate the location of the tree protection fencing for each corresponding phase. Tree protection fencing must be minimum 5-foot tall metal unless otherwise approved by the City Manager or designee.

G. Supplemental specifications consistent with tree care industry standards that the project arborist or landscape architect has determined are necessary for the continued viability of trees identified for preservation.

H. Supplemental specifications consistent with tree care industry standards that the project arborist or landscape architect has determined are necessary for the continued viability of stands identified for preservation.

I. A general accounting of soil characteristics on site. Areas of existing or potential tree growth limiting soils due to compaction, drainage, fertility, pH, contamination, or other factors must be clearly identified. Methods for improving areas of tree growth limiting soils if tree planting is proposed in those areas must be specifically addressed.

J. The following inventory data in table or other such organized format corresponding to each open grown tree proposed for planting in the tree canopy site plan:
    1. The assigned tree number;
    2. The genus, species and common name;
    3. The caliper (in inches for broadleaf) or height (in feet for coniferous);
    4. The average mature tree canopy spread (in feet) as identified on any of the tree lists in the UFM Appendices 2 through 5. If an open grown tree approved for planting is not identified on any of the tree lists in the UFM Appendices 2 through 5, then the project arborist or landscape architect must determine the average mature tree canopy spread

using available scientific literature for review and approval by the City Manager or designee;

5. The average mature tree canopy area (in square feet) calculated as (average mature tree canopy spread/2)^2 x π;
6. The proposed available soil volume (in cubic feet) for each tree according to the methodology in UFM Section 12, Part 2. If the available soil volume is greater than 1000 cubic feet, then the soil volume may be labeled as simply "over 1000 cubic feet"; and
7. Additional comments.

K. The following inventory data in table or other such organized format corresponding to each stand proposed for planting in the tree canopy site plan:
   1. The assigned stand number;
   2. The genus, species and common name of trees proposed for planting in the stand;
   3. The average spacing (in feet) and total number of each tree species proposed for planting in the stand;
   4. The height (in feet) or container size (in gallons) of each species proposed for planting in the stand;
   5. The mature tree canopy dripline area of the stand (in square feet) delineated at the outer edge of the stand; and
   6. Additional comments.

L. Any supplemental specifications consistent with tree care industry standards that the project arborist or landscape architect has determined are necessary for the viability of trees proposed for planting.

M. A summary in table or other such organized format clearly demonstrating the effective tree canopy cover that will be provided for the overall development site (excluding streets), and for each lot for subdivisions and land partitions in the R-1, R-2, R-3.5, R-4.5 and R-7 zones (excluding streets) as outlined below. "Development site" is defined in TCDC Chapter 18.30, Definitions.
   1. The area (in square feet) of the overall development site and each lot; and
   2. The effective tree canopy area that will be provided for the overall development site and each lot which will be considered the sum of the following:
      a. Double the canopy area (in square feet) of all open grown trees in the tree canopy site plan proposed for preservation within the overall development site and each lot (or associated right of way, excluding median trees). Trees identified on the nuisance tree list in UFM Appendix 6, or trees with a condition rating or suitability for preservation rating of less than 2 are not eligible for credit towards the effective tree canopy. The overall development site and each lot (or associated right of way) with the largest percentage of the trunk immediately above the trunk flare or root buttresses will be assigned the effective tree canopy cover area for the corresponding tree;
      b. Double the canopy area (in square feet) of all stands in the tree canopy site plan proposed for preservation within the overall development site and each lot (or associated right of way, excluding median trees). Trees identified on the nuisance tree list in UFM Appendix 6, or trees with a condition rating or suitability for preservation rating of less than 2 are not eligible for credit towards the effective tree canopy. The eligible tree canopy area will be the portion directly above the overall development site and each lot (or associated right of way). The canopy area of any stand grown tree with the largest percentage of the trunk immediately above the trunk flare or root buttresses outside of the overall development site and each

lot (or associated right of way) may not be eligible for credit towards the effective tree canopy cover requirement for that development site or lot;

c. 1.5 times the canopy area (in square feet) of all trees less than 6-inch DBH in the tree canopy site plan proposed for preservation within the overall development site and each lot (or associated right of way, excluding median trees) that are identified on the native tree list in UFM Appendix 5.
d. The mature canopy area (in square feet) of all open grown trees in the tree canopy site plan, except for those from the native tree list in UFM Appendix 5, to be planted and maintained within the overall development site and each lot (or associated right of way, excluding median trees);
e. 1.25 times the mature canopy area (in square feet) of all open grown trees from the native tree list in UFM Appendix 5 in the tree canopy site plan to be planted and maintained within the overall development site and each lot (or associated right of way, excluding median trees);
f. 1.25 times the mature canopy area (in square feet) of each stand in the tree canopy site plan to be planted and maintained within the overall development site and each lot (or associated right of way, excluding median trees). The eligible mature tree canopy area will be the portion directly above the overall development site and each lot (or associated right of way); and
g. Divide the tree canopy area (calculated per Part 3.M.2.a-f) for the overall development site and each lot by the total area of the overall development site and each lot respectively to determine the effective tree canopy cover for the overall development site and each lot.

N. The minimum requirements for effective tree canopy cover are outlined below:
    1. Subdivisions and land partitions:
        a. 40 percent for the overall development site in the R-1, R-2, R-3.5, R-4.5 and R-7 zones, and 15 percent for each lot designated for single detached house development.
        b. 33 percent for the overall development site in the R-12, R-25, and R-40 zones.
    2. Apartments: 33 percent for the overall development site.
    3. Nonresidential development: 33 percent for the overall development site, except nonresidential development in the MU-CBD, MUC-1, I-L, and I-H zones and schools (as defined in TCDC Section 18.60.050.J) are only required to provide 25 percent for the overall development site.
    4. Mobile home parks: 33 percent for the overall development site.
    5. Wireless communication facilities: zero percent for the overall development site.
O. A signature of approval and statement from the project arborist or landscape architect, attesting that:
    1. The tree preservation and removal site plan meets all of the requirements in UFM Section 10, Part 1 of;
    2. The canopy site plan meets all of the requirements in UFM Section 10, Part 2; and
    3. The supplemental report meets all of the requirements UFM Section 10, Part 3.

Part 4. Urban Forestry Plan – Tree Canopy Fee Calculation Requirements:

A. The tree canopy fee will be calculated as follows:
    a. If the percentage of effective tree canopy cover is less than the applicable standard percentage in Part 3, item N for the overall development site, find the difference

(in square feet) between the proposed effective tree canopy cover and the applicable standard effective tree canopy cover for the overall development site and multiply the difference (in square feet) by the most recent wholesale median tree cost established by the PNW-ISA for a 3-inch diameter deciduous tree in the Willamette Valley, OR divided by 59 square feet.

2. In cases where the overall development site meets the standard percentage in Part 3.N yet the percentage of effective tree canopy cover is less than 15 percent for any individual lot designated for single detached house development in the R-1, R-2, R-3.5, R-4.5 and R-7 zones, find the difference (in square feet) between the proposed effective tree canopy cover and 15 percent effective tree canopy cover for each deficient lot and multiply the difference (in square feet) by the most recent wholesale median tree cost established by the PNW-ISA for a 3-inch diameter deciduous tree in the Willamette Valley, OR divided by 59 square feet.

Part 5. Urban Forestry Plan – Significant Tree Grove Preservation Considerations:

A. Connects with and does not become isolated from the remaining portion of the significant tree grove on or off the site;
B. Preserves the most dominant, resilient, and healthiest native trees;
C. Preserves a diversity of species, ages, and sizes of native trees;
D. Preserves native understory and supports natural succession;
E. Preserves and minimizes disturbance to native soils and tree roots;
F. Does not preserve hazard trees or trees likely to soon become hazard trees particularly those subject to windthrow (low live crown ratio, high height to diameter ratio, suppressed root development) and exacerbated by newly created edges or removal of adjacent trees; and
G. Does not preserve trees currently or likely to soon be severely impacted by large scale weed, pest, or disease outbreaks or changing site conditions such as hydrology, light, temperature, or wind.

Section 11 - Urban Forestry Plan Implementation Standards

Part 1. Urban Forestry Plan Implementation Standards – Inspection Requirements:

A. After tree protection measures are installed and prior to any ground disturbance other than what is necessary for the installation of tree protection measures and erosion, sediment, and pollutant controls measures, the project arborist or landscape architect must perform a site inspection for tree protection measures, document compliance or non-compliance with the urban forestry plan, and send written verification with a signature of approval directly to the City Manager or designee within one week of the site inspection.

B. Following the completion of item A, the project arborist or landscape architect must perform semimonthly (twice monthly) site inspections for tree protection measures during periods of active site development and construction, document compliance or non-compliance with the urban forestry plan, and send written verification with a signature of approval directly to the City Manager or designee within one week of the site inspection. The city may approve adjustments to the frequency of inspections based on the project arborist's recommendation. The project arborist must also be available on-call to monitor and document construction activity near protected trees when necessary.

C. When the development will result in the division of land into multiple lots, the applicant must provide on the building site plan for each resulting lot, the information detailed in UFM Section 10, Part 2.B-N consistent with the approved urban forestry plan. Prior to issuance of any building permits for each resulting lot, the project arborist or landscape architect must perform a site inspection for tree protection measures, document compliance or non-compliance with the urban forestry plan, and send written verification with a signature of approval with the building permit submittal documents.

D. When the development will result in the division of land into multiple lots, the project arborist or landscape architect must perform a site inspection for tree protection measures for all lots that are not proposed to be associated with a building permit, document compliance or non-compliance with the urban forestry plan, and send written verification with a signature of approval to the City Manager or designee prior to the issuance of the first building permit resulting from the development.

E. Prior to final building inspection for any development with an urban forestry plan that is still in effect, the project arborist or landscape architect must perform a site inspection, document compliance or non-compliance with the urban forestry plan and send written verification with a signature of approval to the City Manager or designee.

Part 2. Urban Forestry Plan Implementation Standards – Tree Establishment Requirements:

A. Prior to any ground disturbance work for all development types except for subdivisions and land partitions, the applicant must provide a tree establishment bond for all on-site trees to be planted per the approved urban forestry plan. The total bond amount must be equivalent to the city's average cost to plant and maintain a tree per the applicable standards in the UFM for a period of one year after planting multiplied by the total number of on-site trees to be planted and maintained.

B. Following final building inspection or upon acceptance by the City Manager or designee when there is no final building inspection, the tree establishment period begins immediately and continues for a period of one year.

C. For planted open grown trees, successful establishment will be considered 80 percent survival of the open grown trees planted on the overall development site, and replacement of 100 percent of the remaining open grown trees planted on the overall development site that did not survive.
D. For planted stand grown trees, successful establishment will be considered survival of at least 80 percent of the original stand grown trees planted on the overall development site.

Part 3. Urban Forestry Plan Implementation Standards – Urban Forest Inventory Requirements:

A. Following documentation of compliance with the urban forestry plan by the project arborist or landscape architect for the overall development site, the city will collect spatial and species-specific data for each open grown tree and area of stand grown trees for inclusion in a publicly accessible inventory of trees.
B. Prior to any ground disturbance work, the applicant must provide a fee to cover the city's cost of collecting and processing the inventory data for the entire urban forestry plan.

Section 12 - Street Tree Soil Volume Standards

Part 1. Street Tree Soil Volume Standards – Soil Volume Requirements:

A. Street trees required to be planted by TCDC Chapter 18.420 must be provided the following minimum soil volumes based on the width of the proposed right of way measured from the edge of the street (excluding curb) towards the subject site:

Right of Way Width (feet)	Minimum Soil Volume Requirement (cubic feet per tree)
Up to 10	400
Over 10 up to 12	500
Over 12 up to 14	600
Over 14 up to 16	700
Over 16 up to 18	800
Over 18 up to 20	900
Over 20	1000

Part 2. Street Tree Soil Volume Standards – Soil Volume Calculation Requirements:

A. For open soil volumes, soil depth is assumed to be 3 feet if the tree canopy site plan and supplemental report demonstrate that the tree will not be planted in an area of tree growth limiting soil or the area of tree growth limiting soil will be adequately amended to a depth of 3 feet in the specified planting area.
B. Areas of tree growth limiting soils that have not been adequately amended may not be eligible for credit towards the minimum soil volume requirements in Part 1 of this section.
C. For covered soil volumes, the soil depth is equal to the depth of the covered soil volume as demonstrated by the soil volume plan in Part 3 of this section.
D. Soil volumes for open soil volumes must be calculated (in cubic feet) by measuring the open soil volume area (in square feet) times an assumed soil depth of 3 feet.
E. Soil volumes for covered soils volumes must be calculated (in cubic feet) by multiplying the area of the covered soil volume times the depth of the covered soil volume as demonstrated by the soil volume plan in Part 3 of this section.
F. The total soil volume provided for a tree must be calculated (in cubic feet) by adding the available open soil volume (per Part 2.C) to the available covered soil volume (per Part 2.D) within a 50-foot radius of the tree.
G. The open and covered soil volumes are considered available to a tree only when they are directly connected to the tree by a continuous path of no less than 3 feet in width.
H. In addition, covered soil volumes are considered available to a tree only when demonstrated as available by the soil volume plan in Part 3 of this section.
I. All soil volumes calculated per this section must be displayed for each corresponding tree in the required supplemental report.

Part 3. Street Tree Soil Volume Standards – Soil Volume Plan Requirements:

A. A soil volume plan will be required for any street tree required to be planted by TCDC Chapter 18.420 if a covered soil volume is proposed to be used to meet any portion of the minimum soil volume requirements in Part 1 of this section. The soil volume plan must include all items in Part 3.B-E.

B. One standard size D (24" x 36") plan set, one reduced ledger size (11" x 17") plan set, and one electronic copy in PDF format, submitted on digital storage media. The soil volume plan must be coordinated and approved by a registered landscape architect (the project landscape architect), and must include all of the following elements:
    1. Date of drawing or last revision;
    2. North arrow;
    3. Bar scale;
    4. Site address or assessor's parcel number;
    5. The name, address, telephone number, email address, and license number of the project landscape architect;
    6. The location of property lines or proposed property lines if different from existing;
    7. The location of proposed building footprints, utilities and irrigation, streets, and other paved or impermeable areas;
    8. The assigned numbers (consistent with the tree canopy site plan and supplemental report of a concurrent urban forestry plan) of all trees;
    9. The location of each open soil volume area and each covered soil volume area considered available for each tree; and
    10. The City of Tigard Example Covered Soil Volume Plan Drawings and Specifications unless otherwise approved by the City Manager or designee.

C. When the development will result in the division of land into multiple lots, the applicant must provide on the building site plan for each resulting lot, the information detailed in Part 3.B.1-10 of this section consistent with the approved soil volume plan and a signature of approval from the project landscape architect.

D. The project landscape architect must document compliance or non-compliance (including but not limited to materials receipts and observations from site inspections) with the approved soil volume plan, and send written verification with a signature of approval to the City Manager or designee prior to final building inspection for all lots associated with each particular tree. When the development will result in the division of land into multiple lots, the project landscape architect must provide the documentation or verification described above for all lots that are not proposed to be associated with a building permit prior to the issuance of the first building permit resulting from the development. When the development does not involve a building permit, the project landscape architect must provide the documentation or verification described above prior to final acceptance by the City Manager or designee.

E. If any subsequent modifications to an approved soil volume plan is required to meet the minimum soil volume requirements in Part 1 of this section, a revised soil volume plan that meets the requirements of Part 3 of this section must be provided that reflect the revisions.

Section 13 - Parking Lot Tree Canopy Standards

Part 1. Parking Lot Tree Canopy Standards – Parking Lot Tree Requirements:

A. Parking lot trees must be planted in a manner consistent with the tree care industry standards outlined in the most current version of the ANSI A300 Standards for Tree Care Operations.
B. Parking lot trees must have a minimum caliper of 1.5 inches or equivalent height at the time of planting.
C. Parking lot tree species must be from the parking lot tree list, unless otherwise approved by the City Manager or designee.
D. Parking lot trees may not be planted with the center of their trunks closer than 3 feet from any hard surface paving, including curbs.
E. Parking lot trees must be evenly distributed within the parking area, and no greater than 6 feet from the parking area.
F. Parking lot trees must be provided a minimum of 1000 cubic feet of soil volume per tree.

Part 2. Parking Lot Tree Canopy Standards – Soil Volume Calculation Requirements:

A. Soil volumes for open soil volumes must be calculated (in cubic feet) by measuring the open soil volume area (in square feet) times an assumed soil depth of 3 feet.
B. Soil volumes for covered soils volumes must be calculated (in cubic feet) by multiplying the area of the covered soil volume times the depth of the covered soil volume as demonstrated by the parking lot tree canopy plan in Part 3 of this section.
C. The total soil volume provided for a tree must be calculated (in cubic feet) by adding the available open soil volume (per Part 2.A) to the available covered soil volume (per Part 2.B) within a 50-foot radius of the tree.
D. The open and covered soil volumes are considered available to a tree only when they are directly connected to the tree by a continuous path of no less than 3 feet in width, and demonstrated as available by the parking lot tree canopy plan in Part 3 of this section.
E. All soil volumes calculated per this section must be displayed for each corresponding tree in the supplemental report when an urban forestry plan is concurrently required.

Part 3. Parking Lot Tree Canopy Standards – Parking Lot Tree Canopy Plan Requirements:

A. A parking lot tree canopy plan will be required unless the City Manager or designee determines the requirements of a concurrent urban forestry plan per TCDC Chapter 18.420 will meet the equivalent standards in Part 3 of this section. The parking lot tree canopy plan must include all items in Part 3.B-E.
B. One standard size D (24" x 36") plan set, one reduced ledger size (11" x 17") plan set, and one electronic copy in PDF format, submitted on digital storage media. The parking lot tree canopy plan must be coordinated and approved by a registered landscape architect (the project landscape architect), and must include all of the following elements:
    1. Date of drawing or last revision;
    2. North arrow;
    3. Bar scale;
    4. Site address or assessor's parcel number;
    5. The name, address, telephone number, email address, and license number of the project landscape architect;

6. The location of property lines or proposed property lines if different from existing;
7. The location of proposed building footprints, utilities and irrigation, streets, and other paved or impermeable areas;
8. The location of areas of tree growth limiting soils due to compaction, drainage, fertility, pH, contamination, or other factors;
9. Methods for improving areas of tree growth limiting soils if tree planting is proposed in those areas.
10. The location of all parking lot striping and the location of the limits of the parking area, which includes all parking spaces, all landscape islands, and all parking aisles;
11. Assigned numbers (consistent with the tree canopy site plan and supplemental report of a concurrent urban forestry plan) of all parking lot trees;
12. The location, species, and caliper (in inches for broadleaf) or height (in feet for coniferous) of all parking lot trees;
13. Depiction of the average mature tree canopy spread (in feet as identified on any of the tree lists in UFM Appendices 2 through 5) for each parking lot tree. If a parking lot tree is not identified on any of the tree lists in UFM Appendices 2 through 5, then the project arborist or landscape architect must determine the average mature tree canopy spread using available scientific literature for review and approval by the City Manager or designee;
14. The location of each open soil volume area and each covered soil volume area considered available for each tree; and
15. If covered soil volumes are proposed to meet any portion of the soil volume requirement in Part 1.F of this section, the City of Tigard Example Covered Soil Volume Plan Drawings and Specifications unless otherwise approved by the City Manager or designee.

C. A summary in table or other such organized format clearly demonstrating the proposed percent tree canopy cover at maturity directly over the parking area as follows:
    1. The area (in square feet) of the parking area as shown in the parking lot tree canopy plan;
    2. The average mature tree canopy area for each parking lot tree as (average mature tree canopy spread/2)^2 x π;
    3. The total combined mature tree canopy area (in square feet) of all parking lot trees less the percentage not directly over the parking area; and
    4. The total combined mature tree canopy area directly over the parking area (in square feet) divided by the parking area.
D. The project landscape architect must document compliance or non-compliance (including but not limited to materials receipts and observations from site inspections) with the approved parking lot tree canopy plan, and send written verification with a signature of approval to the City Manager or designee prior to final building inspection or prior to final acceptance when there is no final building inspection.
E. If any subsequent modifications to an approved parking lot tree canopy plan is required, a revised parking lot tree canopy plan that meets the requirements of Part 3 of this section must be provided that reflect the revisions.

CITY OF Tigard

Tree Risk Assessment Form

Hazard Rating:

Probability of Failure	+	The Target Area	+	Size of Defective Part	=	Overall Risk Rating

Recommended Hazard Tree Abatement Procedures:

_____

_____

_____

Property Address:_____

Location: ☐ Public ☐ Private ☐ Right-of-Way

Protected Tree: ☐ Yes ☐ No

Tree Species:_____

Diameter at Breast Height (DBH):_____

Tree Height:_____

Crown Spread:_____

Tree Part Subject of Evaluation:_____

Diameter of Subject Tree Part:_____

Distance to Target of Subject Tree Part:_____

Length of Subject Tree Part:_____

Target:_____

Occupancy of Target: ☐ Occasional Use ☐ Intermittent Use ☐ Frequent Use ☐ Constant Use

Date of Evaluation:
Tree Risk Assessor:
ISA Number:

Tree Risk Assessor Signature:_____

***Fill out this and supplemental rating form completely and attach: 1) photos of the tree; 2) an aerial photo showing the location of the tree on the subject property; and 3) a supplemental tree risk assessment report more fully describing whether the definition of hazard tree has been met and, if necessary, recommended hazard tree abatement procedures.**

Probability of Failure (1 - 5 points)			(√) One
Low 1 point	Defect is not likely to lead to imminent failure, and no further action is required. In many cases, defects might not be recorded.	Minor branch or crown dieback, small wounds, minor defects.	
Moderate 2 points	One or more defects areas well-established but typically do not lead to failure for several years. Corrective action might be useful to prevent future problems but only if time and money are available. Not the highest priority for action, these are retain and monitor situations used to inform budget and work schedules for subsequent years.	Several defects present. • Shell wall exceeds minimum requirement • Cracks initiated but no extensive decay • Cavity opening or other stem damage less than 30% of circumference • Crown damage or breakage less than 50% of canopy (30% in pines) • Dead crown limbs with fine twigs attached and bark intact • Weak branch union such as major branch or codominant stem with included bark • Stem girdling roots with less than 40% of circumference compressed • Root damage or root decay affects less than 33% of roots within the critical zone • Standing dead tree that is recently dead (still has fine twigs) and no other significant defects	
Moderately High 3 points	One or more defects areas well-established, but not yet deemed to be a high priority issue. Additional testing may be required or, the assessor may feel the problems are not serious enough to warrant immediate action, but do warrant placing the tree on a list of trees to be inspected more regularly. These are Retain and Monitor trees.	Areas of decay that may be expanding; trees that have developed a recent but not yet critical lean; cracks noted but may be stable; edge trees that may adapt and become more stable.	
High 4 points	The defect is serious and imminent failure is likely and corrective action is required immediately. These cases require treatment within the next few days or weeks.	One or more major defects present. • Insufficient shell wall thickness • Large cracks, possibly associated with other defects • Cavity opening greater than 30% of circumference • Crown damage or breakage more than 50% of canopy (> 30% in pines) • Dead crown limbs with no fine twigs and bark peeling away. May be some saprophytic fungal evidence • Weak branch union has crack(s) or decay • Stem girdling root affects 40% or more of trunk circumference • More than 33% of roots are damaged within the critical zone • Tree is leaning. Recent root breakage, or soil mounding, or cracks, or extensive decay evident • Standing dead tree, has very few fine twigs, and no other significant defects	
Extreme 5 points	The tree or component part is already failing. An emergency situation where treatment is required today.	Multiple high or extreme risk defects present. • Shell wall is already cracked and failing • Major cracks already open, such as hazard beams or split trunks • More than 30% of circumference defective and cracks or decay obvious • Dead crown limbs, no fine twigs, no bark, decay present • Weak branch union has crack(s) and decay • Leaning tree with recent root failure, soil mounding, and cracks or extensive decay • Dead branches hung up or partly failed • Visual obstruction of traffic signs/lights at intersections • Any partly failed component or whole tree • Standing dead trees that have been dead for more than one season with multiple defects such as cracks, decay, damaged roots, shedding bark	

The Target Area (1 - 4 points)		(√) One
Low 1 point	Sites rated at one point are very rarely used for any long period of time, and people passing through the area (regardless of how they travel) do not spend a lot of time within the striking range of the tree. There are no valuable buildings or other facilities within striking range. Examples are seldom used back country roads or trails, seldom used overflow or long-term parking, industrial areas where workers drive machines (trucks, forklifts, tractors) with substantial cab protection; natural or wilderness areas; transition areas with limited access; remote areas of yards, parks, or private lands open for public use within set hours. All of these sites have relatively low occupancy within any one day.	
Moderate 2 points	Valuable buildings are at the edge off the striking distance, so they would not be seriously damaged even if the tree did fall down. The site has people within striking range occasionally, meaning less than 50% of the time span in any one day, week, or month, and do not stay within striking range very long. Examples include areas that are used seasonally; more remote areas of camping areas or parks; minor rural roads; picnic areas; low to moderate use trails; most park and school playgrounds.** Moderate to low use parks, parking lots with daily use; secondary roads and intersections, dispersed camping sites, moderate to high use trails, works and/or storage yards.	
Moderately High 3 points	The site has valuable buildings within striking range. People are within striking range more than 50% of the time span in any one day, week, or month, and their exposure time can be more than just passing by. Examples include secondary roads, trails, and access points; less commonly used parking areas and trails within parks; trails alongside fairways, bus stops.	
High 4 points	The highest rated targets have a) a building within striking range frequently accessed by people, often for longer periods of time, or high volumes of people coming and going within striking range. Valuable buildings or other structures within striking range that would suffer major structural damage in the event of tree failure or; b) people within striking distance of the tree, or both, seven days a week, all year long, and at all times of the day. Examples include main roads, the busiest streets or highways; high volume intersections power lines;* paths through busy open space areas and parks; short-term parking constantly in use; institutional buildings such as police stations, hospitals, fire stations; shopping areas; highly used walking trails; pick up and drop off points for commuters; golf tees and greens; emergency access routes and/or marshalling areas; handicap access areas; high use camping areas, visitor centers or shelters; residential buildings; industrial areas where workers take outside breaks; development sites where work activity within striking range lasts more than a few hours at a time.	

*There are very specific safe work practices required when working close to Power Lines. These vary depending on location, but all employ similar principles.

**It is recognized that there is a tendency to rate playgrounds higher simply because children are involved. Most playgrounds are occupied for short periods of time in daylight hours. Overall, their use is infrequent when compared to other locations such as busy streets.

Size of Defective Part (1 - 3 points)		(√) One
1 point	Branches or stems up to 10 centimeters (4 inches) in diameter	
2 points	Branches or stems between 10 to 50 centimeters (4 to 20 inches) in diameter.	
3 points	Branches or stems greater than 50 centimeters (20 inches) in diameter.	

*In some cases, there may be large areas of sloughing back bark, dwarf mistletoe brooms, branch stubs, or large bird nests in cavities that pose a risk. The assessor must use his or her judgment to assign a number to these components. In general, the lowest rating (1 point) is reserved for component parts that would not create much impact on a person or property if it were to fail. The highest rating is used for parts that have the potential to kill people or seriously damage property.

Overall Risk Rating and Action Thresholds			(√) One
Risk Rating	***Risk Category***	***Interpretation and Implications***	
3	Low 1	Insignificant – no concern at all.	
4	Low 2	Insignificant – very minor issues.	
5	Low 3	Insignificant – minor issues not of concern for many years yet.	
6	Moderate 1	Some issues but nothing that is likely to cause any problems for another 10 years or more.	
7	Moderate 2	Well defined issues – retain and monitor. Not expected to be a problem for at least another 5-10 years.	
8	Moderate 3	Well defined issues – retain and monitor. Not expected to be a problem for at least another 1-5 years.	
9	High 1	The assessed issues have now become very clear. The tree can still reasonably be retained as it is not likely to fall apart right away, but it must now be monitored annually. At this stage, it may be reasonable for the risk manager/owner to hold public education sessions to inform people of the issues and prepare them for the reality that part or the entire tree has to be removed.	
10	High 2	The assessed issues have now become very clear. The probability of failure is now getting serious, or the target rating and/or site context have changed such that mitigation measures should now be on a schedule with a clearly defined timeline for action. There may still be time to inform the public of the work being planned, but there is not enough time to protracted discussion about whether or not there are alternative options available.	
11	High 3	The tree, or a part of it has reached a stage where it could fail at any time. **Action to mitigate the risk is required within weeks rather than months.** By this stage there is not time to hold public meetings to discuss the issue. Risk reduction is a clearly defined issue and although the owner may wish to inform the public of the planned work, he/she should get on with it to avoid clearly foreseeable liabilities.	
12	Extreme	This tree, or part of it, is in the process of failing. **Immediate action is required.** All other, less significant tree work should be suspended, and roads or work areas should be closed off, until the risk issues have been mitigated. This might be as simple as removing the critical part, drastically reducing overall tree height, or taking the tree down and cordoning off the area until final clean up, or complete removal can be accomplished. The immediate action required is to ensure that the clearly identified risk of harm is eliminated. For areas hit by severe storms, where many extreme risk trees can occur, drastic pruning and/or partial tree removals, followed by barriers to contain traffic, would be an acceptable first stage of risk reduction. There is no time to inform people or worry about public concerns. Clearly defined safety issues preclude further discussion.	

The Table shown above outlines the interpretation and implications of the risk ratings and associated risk categories. This table is provided to inform the reader about these risk categories so that they can better understand any risk abatement recommendations made in the risk assessment report.

Notes:_____

Street Tree List - Small Stature Trees (up to 25' in height at maturity)

Common Name	Scientific Name	Height (feet)	Spread (feet)	Canopy Area	Soil Type	Suitable for Under Powerlines	Special Features/Considerations
Vine Maple	*Acer circinatum*	25'	25'	491 sq. ft.	well drained	Yes*	native, requires some shade
Paperbark Maple	*Acer griseum*	25'	25'	491 sq. ft.	any	Yes*	attractive peeling bark
Japanese Maple	*Acer palmatum*	20'	25'	491 sq. ft.	any	Yes*	do not plant dwarf varieties
Serviceberry	*Amelanchier arborea*	20'	25'	491 sq. ft.	well drained	Yes*	hardy species
Allegheny Serviceberry	*Amelanchier laevis*	25'	15'	177 sq. ft.	well drained	Yes*	edible berries
Apple Serviceberry	*Amelanchier* x *grandiflora*	25'	15'	177 sq. ft.	well drained	Yes*	branches resist breakage
Western Serviceberry	*Amelanchier alnifolia*	20'	20'	314 sq. ft.	well drained	Yes*	native to Portland metropolitan region
Strawberry Tree	*Arbutus unedo*	25'	20'	314 sq. ft.	any	No	durable tree once established
Paw Paw	*Asimina triloba*	25'	20'	315 sq. ft.	any	No	edible fruit
American Hornbeam	*Carpinus caroliniana*	25'	20'	314 sq. ft.	any	No	requires moderate amount of water
Japanese Hornbeam	*Carpinus japonica*	20'	25'	491 sq. ft.	any	No	no serious pest or disease issues
Chinese Catalpa	*Catalpa ovata*	25'	25'	491 sq. ft.	well drained	No	large leaves
Judas Tree	*Cercis siliquastrum*	25'	30'	707 sq. ft.	any	Yes*	native to southern Europe and western Asia
Chinese Fringetree	*Chionanthus retusus*	20'	25'	491 sq. ft.	any	No	native to China, Korea, and Japan.
Gloryblower Tree	*Clerodendrum trichotomum*	20'	20'	314 sq. ft.	well drained	Yes*	may freeze back in cold winters
Pagoda Dogwood	*Cornus alternifolia*	25'	20'	315 sq. ft.	any	No	needs ample water
Kousa Dogwood	*Cornus kousa*	20'	20'	491 sq. ft.	any	Yes*	prefers some shade
Corneliancherry Dogwood	*Cornus mas*	20'	15'	177 sq. ft.	any	Yes*	requires ample water, but otherwise hardy
Common Smoketree	*Cotinus coggygria*	15'	15'	177 sq. ft.	well drained	Yes*	native range is southern Europe to central China
American Smoketree	*Cotinus obovatus*	25'	25'	491 sq. ft.	well drained	Yes*	native to eastern US
Lavalle Hawthorne	*Crataegus* x *lavallei*	25'	20'	314 sq. ft.	any	Yes*	has thorns
Goldenrain Tree	*Koelreuteria paniculata*	20'	15'	177 sq. ft.	any	Yes*	widely used in California
Crape Myrtle	*Lagerstroemia indica*	20'	20'	314 sq. ft.	well drained	Yes*	choose variety adapted to Portland region
Maackia	*Maackii amurensis*	25'+	25'	491 sq. ft.	well drained	No	rounded form

*These trees have been approved by Portland General Electric (PGE) for planting beneath overhead powerlines

Street Tree List - Small Stature Trees
(up to 25' in height at maturity)

Common Name	Scientific Name	Height (feet)	Spread (feet)	Canopy Area	Soil Type	Suitable for Under Powerlines	Special Features/Considerations
Sweetbay Magnolia	*Magnolia virginiana*	25'+	20'	314 sq. ft.	well drained	No	fragrant
Loebner Magnolia	*Magnolia x loebneri*	25'	25'	491 sq. ft.	any	No	slow growing
Saucer Magnolia	*Magnolia x soulangiana*	25'	25'	491 sq. ft.	any	Yes*	attractive pink flowers
Flowering Crabapple	*Malus spp.*	20'	20'	314 sq. ft.	any	Yes*	many varieties
Persian Parrotia	*Parrotia persica*	25'+	20'	314 sq. ft.	well drained	No	native range is Iran, Turkey, and Georgia
Paperbark Cherry	*Prunus serrula*	25'	25'	491 sq. ft.	any	No	attractive bark
Yoshino Cherry	*Prunus x yedoensis*	25'+	30'	707 sq. ft.	any	No	attractive flowers
Tall Stewartia	*Stewartia monadelpha*	25'+	20'	314 sq. ft.	well drained	No	requires ample moisture when young
Japanese Stewartia	*Stewartia pseudocamellia*	25'+	25'	491 sq. ft.	well drained	No	requires ample moisture when young
Japanese Snowbell	*Stryax japonicus*	25'	25'	491 sq. ft.	well drained	Yes*	mostly trouble free
Fragrant Styrax	*Styrax obassia*	25'	20'	314 sq. ft.	well drained	No	fragrant flowers
Japanese Tree Lilac	*Syringa reticulata*	25'+	15'	177 sq. ft.	well drained	No	native to northern Japan

*These trees have been approved by Portland General Electric (PGE) for planting beneath overhead powerlines

Street Tree List - Medium Stature Trees (between 25' and 40' in height at maturity)

Common Name	Scientific Name	Height (feet)	Spread (feet)	Canopy Area	Soil Type	Suitable for Under Powerlines	Special Features/Consideration
Hedge Maple	*Acer campestre*	35'	30'	707 sq. ft.	any	No	tolerant of urban stresses
European Hornbeam	*Carpinus betulus*	35'	25'	491 sq. ft.	any	No	dense crown
American Hornbean	*Carpinus caroliniana*	30'	20'	314 sq. ft.	any	No	moderate moisture, tolerates some flooding
Southern Catalpa	*Catalpa binonioides*	35'	35'	962 sq. ft.	any	No	large leaves
Yellowwood	*Cladrastis kentuckia*	35'	35'	962 sq. ft.	all	No	fragrant, white, pendulous flowers
Giant Dogwood	*Cornus controversa*	30'	35'	962 sq. ft.	well drained	No	wide spreading, flowers in May/June
Pacific Dogwood	*Cornus nuttallii*	40'	30'	707 sq. ft.	loam	No	native, requires moist soil and some shade
Hardy Rubber Tree	*Eucommia ulmoides*	40'	40'	1256 sq. ft.	loam	No	rubber is extracted from tree's wood
Cascara	*Frangula pershiana*	30'	25'	491 sq. ft.	any	No	native to Portland metropolitan region
Mountain Silverbell	*Halesia monticola*	40'	25'	491 sq. ft.	well drained	No	requires moist soils
Carolina Silverbell	*Halesia tetraptera*	35'	30'	707 sq. ft.	well drained	No	requires moist soils
Japanese Raisintree	*Hovenia dulcis*	35'	25'	491 sq. ft.	any	No	drought and frost tolerant
Goldenrain Tree	*Koelreuteria paniculata*	35'	35'	962 sq. ft.	any	No	tolerant of urban stresses
Yulan Magnolia	*Magnolia denudata*	35'	30'	707 sq. ft.	any	No	white, fragrant flowers
Sourwood	*Oxydendrum arboreum*	30'	20'	314 sq. ft.	well drained	No	white, midsummer flowers
American Hophornbeam	*Ostrya virginiana*	35'	25'	491 sq. ft.	any	No	exfoliating bark texture is attractive
Amur Corktree	*Phellodendron amurense*	40'	30'	707 sq. ft.	any	No	fragrant leaves and fruit
Limber Pine	*Pinus flexilis*	35'	15'	177 sq. ft.	any	No	drought resistant
Chinese Pistache	*Pistacia chinensis*	30'	25'	491 sq. ft.	well drained	No	invasive in California
Fragrant Epaulette Tree	*Pterostyrax hispida*	40'	30'	707 sq. ft.	well drained	No	native to Japan
Bambooleaf Oak	*Quercus myrsinifolia*	35'	25'	491 sq. ft.	any	No	new leaves are purple
Korean Mountain Ash	*Sorbus alnifolia*	35'	30'	707 sq. ft.	any	No	messy fruit attracts birds
Lacebark Elm	*Ulmus parvifolia*	40'	40'	1256 sq. ft.	any	No	resistent to Dutch elm disease

Street Tree List - Large Stature Trees
(over 40' in height at maturity)

Common Name	Scientific Name	Height (feet)	Spread (feet)	Canopy Area	Soil Type	Suitable for Under Powerlines	Special Features/Consideration
Spanish Fir	*Abies pinsapo*	50'	30'	707 sq. ft.	well drained	No	drought tolerant
Freeman Maple	*Acer x freemanii*	60'	40'	1256 sq. ft.	any	No	multiple varieties available
Yellow Buckeye	*Aesculus flava*	60'	40'	1256 sq. ft.	any	No	branches droop
Red Horsechestnut	*Aesculus x carnea*	60'	40'	1256 sq. ft.	any	No	best in well drained soil
River Birch	*Betula nigra*	45'	35'	962 sq. ft.	well drained	No	resistant to bronze birch borer
Incense Cedar	*Calocedrus decurrens*	60'	20'	314 sq. ft.	any	No	susceptible to Seridium canker
Spanish Chestnut	*Castanea sativa*	70'	50'	1963 sq. ft.	any	No	edible nuts
Northern Catalpa	*Catalpa speciosa*	50'	30'	707 sq. ft.	any	No	large leaves
Hackberry	*Celtis occidentalis*	45'	35'	962 sq. ft.	any	No	tolerant of urban stresses, deep rooted
Turkish Hazel	*Corylus colurna*	50'	30'	707 sq. ft.	well drained	No	very cold hardy
Japanese Cedar	*Cryptomeria japonica*	50'	25'	491 sq. ft.	any	No	smog tolerant
Baker Cypress	*Cupressus bakerii*	50'	35'	962 sq. ft.	any	No	native from N. California to S. Oregon
Dove Tree	*Davidia involucrata*	50'	30'	707 sq. ft.	well drained	No	dove-like flowers
Hardy Rubber Tree	*Eucommia ulmoides*	40'	40'	1256 sq. ft.	well drained	No	rubber extracted from tree's wood
European Beech	*Fagus sylvatica*	50'	40'	1256 sq. ft.	well drained	No	beautiful bark
Oregon Ash	*Fraxinus latifolia*	60'	30'	707 sq. ft.	any	No	native to Portland metropolitan region
Ginkgo	*Ginkgo biloba - male plants only*	60'	45'	1590 sq. ft.	any	No	many large stature varieties available
Honeylocust	*Gleditsia triacanthos*	45'	35'	962 sq. ft.	any	No	tolerant of urban stresses
Kentucky Coffeetree	*Gymnocladus dioicus*	65'	50'	1963 sq. ft.	any	No	fragrant flowers
English Walnut	*Juglans regia*	50'	50'	1963 sq. ft.	any	No	edible nuts
Tulip Tree	*Liriodendron tulipifera*	60'	30'	707 sq. ft.	any	No	beautiful fall color
Cucumber Magnolia	*Magnolia acuminata*	50'	40'	1256 sq. ft.	well drained	No	fruit resembles cucumber
Southern Magnolia	*Magnolia grandiflora*	70'	60'	1963 sq. ft.	any	No	broadleaf evergreen, large white flowers
Dawn Redwood	*Metasequoia glyptostroboides*	50'	25'	491 sq. ft.	any	No	deciduous conifer
Tanoak	*Notholithocarpus densiflorus*	40'	30'	707 sq. ft.	any	No	native to southwestern coast of US
Tupelo	*Nyssa sylvatica*	45'	25'	491 sq. ft.	any	No	beautiful fall color
Amur Corktree	*Phellodendron amurense - male plants only*	40'	35'	962 sq. ft.	any	No	drops leaves early in fall
Bosnian Pine	*Pinus heldreichii*	55'	25'	491 sq. ft.	any	No	pest resistant
Japanese Black Pine	*Pinus thunbergii*	50'	25'	492 sq. ft.	any	No	widely adapted tree
London Planetree	*Platanus* x *acerifolia*	50'	40'	1256 sq. ft.	any	No	disease resistant, pollution tolerant
Douglas Fir	*Pseudotsuga menziesii*	80'	30'	707 sq. ft.	any	No	native to Portland metropolitan region
Sawtooth Oak	*Quercus acutissima*	50'	40'	1256 sq. ft.	any	No	native to Asia
Swamp White Oak	*Quercus bicolor*	60'	45'	1590 sq. ft.	any	No	leaf underside is silvery
Canby Oak	*Quercus canbyi*	45'	40'	1256 sq. ft.	any	No	extremely drought tolerant
Canyon Live Oak	*Quercus chrysolepis*	55'	30'	707 sq. ft.	any	No	native from California to southern Oregon

Street Tree List - Large Stature Trees (over 40' in height at maturity)

Common Name	Scientific Name	Height (feet)	Spread (feet)	Canopy Area	Soil Type	Suitable for Under Powerlines	Special Features/Consideration
Scarlet Oak	*Quercus coccinea*	60'	40'	1256 sq. ft.	any	No	best in fertile soil
Oregon White Oak	*Quercus garryana*	65'	50'	1963 sq. ft.	any	No	native to Portland metropolitan region
Silverleaf Oak	*Quercus hypoleucoides*	50'	35'	962 sq. ft.	well drained	No	wide range of adaptation
Holly Oak	*Quercus ilex*	60'	40'	1256 sq. ft.	any	No	silvery underside of leaf
Shingle Oak	*Quercus imbricaria*	60'	50'	1963 sq. ft.	well drained	No	branches droop
California Black Oak	*Quercus kelloggii*	60'	45'	1590 sq. ft.	any	No	native from California to southern Oregon
Valley Oak	*Quercus lobata*	50'	40'	1256 sq. ft.	any	No	California native
Bur Oak	*Quercus macrocarpa*	70'	45'	1590 sq. ft.	any	No	large acorns
Chestnut Oak	*Quercus muhlenbergii*	60'	50'	1963 sq. ft.	well drained	No	found along ridge tops in eastern US
Willow Oak	*Quercus phellos*	60'	45'	1590 sq. ft.	any	No	tolerant of urban stresses
Monterrey Oak	*Quercus polymorpha*	55'	40'	1256 sq. ft.	well drained	No	semi-evergreen
English Oak	*Quercus robur*	60'	40'	1256 sq. ft.	well drained	No	non-native substitute for Garry oak
Red Oak	*Quercus rubra*	60'	45'	1590 sq. ft.	any	No	beautiful fall color
Shumard Oak	*Quercus shumardii*	75'	55'	2376 sq. ft.	any	No	tolerates acidic and poorly drained soil
Cork Oak	*Quercus suber*	50'	50'	1963 sq. ft.	any	No	interesting corky bark
Black Oak	*Quercus velutina*	60'	50'	1963 sq. ft.	well drained	No	tolerates poor/dry soils
Southern Live Oak	*Quercus virginiana*	70'	70'	3848 sq. ft.	any	No	underside of leaf is white
Interior Live Oak	*Quercus wislizeni*	50'	40'	1256 sq. ft.	any	No	broadleaf evergreen, California native
Coast Redwood	*Sequoia sempervirens*	100'	30'	707 sq. ft.	any	No	needs ample water
Japanese Pagodatree	*Styphnolobium japonicum*	65'	40'	1256 sq. ft.	any	No	native to east Asia
Bald Cypress	*Taxodium distichum*	55'	35'	962 sq. ft.	any	No	deciduous conifer, widely adaptive
American Linden	*Tilia americana*	60'	30'	707 sq. ft.	any	No	tolerant of urban stresses
Littleleaf Linden	*Tilia cordata*	60'	40'	1256 sq. ft.	any	No	many varieties available
Silver Linden	*Tilia tomentosa*	45'	30'	707 sq. ft.	any	No	dark green leaves with silver undersides
American Elm	*Ulmus americana - only 'Jefferson' 'Princeton' and 'Valley Forge' cultivars*	65'	55'	1963 sq. ft.		No	classic American elm form with faster growth rate, glossy green leaves. These cultivars selected for good Dutch elm disease resistance.
Frontier Elm	*Ulmus 'Frontier'*	40'	30'	1256 sq. ft.			resistant to Dutch Elm disease
Accolade Elm	*Ulmus ;Morton'*	60'	50'	1256 sq. ft.			resistant to Dutch Elm disease
Triumph Elm	*Ulmus 'Morton Glossy'*	55'	45'	1256 sq. ft.			resistant to Dutch Elm disease
Patriot Elm	*Ulmus 'Patriot'*	50'	40'	1256 sq. ft.			resistant to Dutch Elm disease
Zelkova	*Zelkova serrata*	65'	50'	1963 sq. ft.	any	No	attractive shade tree

Parking Lot Trees
(recommended for parking lots*)

Common Name	Scientific Name	Height (feet)	Spread (feet)	Canopy Area	Soil Type	Suitable for Under Powerlines	Special Features/ Consideration
White Alder	*Alnus rhombifolia*	100'	50'	1963 sq. ft.	any	No	tolerant of heat and wind
Atlas Cedar	*Cedrus atlantica*	60'	50'	1963 sq. ft.	any	No	prune for good form with central leader
Deodar Cedar	*Cedrus deodara*	70'	50'	1963 sq. ft.	any	No	prune for good form with central leader
European Hackberry	*Celtis australis*	70'	45'	1590 sq. ft.	any	No	moderate to fast growing
Kobus Magnolia	*Magnolia kobus*	40'	35'	962 sq. ft.	well drained	No	native to Japan
Star Magnolia	*Magnolia stellata*	20'	15'	177 sq. ft.	any	No	blooms at young age
Roble Beech	*Nothofagus obliqua*	70'	40'	1256 sq. ft.	well drained	No	native to Argentina and Chile
Western White Pine	*Pinus monticola*	75'	25'	491 sq. ft.	well drained	No	native to western US and Canada
Austrian Pine	*Pinus nigra*	55'	40'	1256 sq. ft.	any	No	evergreen conifer
Eastern White Oak	*Quercus alba*	80'	80'	5026 sq. ft.	well drained	No	branches resist breakage

***Any tree appearing on the approved street tree list or the native tree list is also recommended for parking lot use.**
The trees above are additional recommendations that do not appear on these lists.

Columnar Trees

The columnar tree list is no longer provided. Columnar tree coverage must be calculated individually based on cultivar.

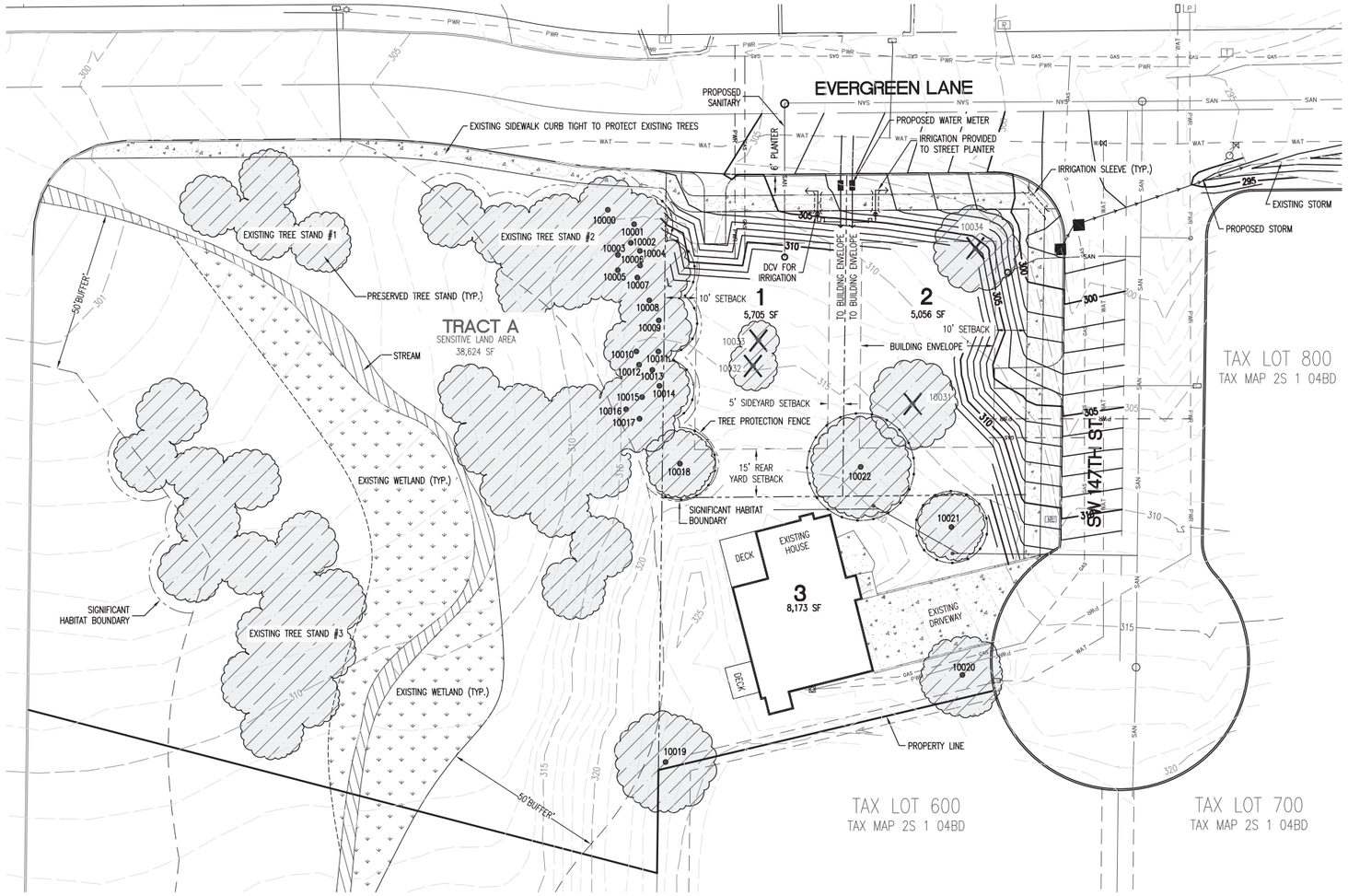
Native Trees

Common Name	Scientific Name	Height (feet)	Spread (feet)	Canopy Area	Stature	Suitable for Under Powerlines	Primary Habitat Types
Grand Fir	*Abies grandis*	150'	40'	1256 sq. ft.	Large	No	Wetland, Riparian, Upland
Big-leaf Maple	*Acer macrophyllum*	65'	50'	1963 sq. ft.	Large	No	Upland
Red Alder	*Alnus rubra*	100'	40'	1256 sq. ft.	Large	No	Riparian, Upland
Madrone	*Arbutus menziesii*	40'	30'	707 sq. ft.	Medium	No	Upland
Pacific Dogwood	*Cornus nuttallii*	40'	30'	707 sq. ft.	Medium	No	Upland
Black Hawthorn	*Crataegus douglasii*	25'	20'	314 sq. ft.	Small	Yes	Wetland, Riparian, Upland
Ponderosa Pine	*Pinus ponderosa*	200'	30'	707 sq. ft.	Large	No	Upland
Black Cottonwood	*Populus balsamifera ssp. trichocarpa*	175'	40'	1256 sq. ft.	Large	No	Wetland, Riparian
Quaking Aspen	*Populus tremuloides*	30'	15'	177 sq. ft.	Medium	No	Wetland, Riparian
Bitter Cherry	*Prunus emarginata*	30'	20'	314 sq. ft.	Medium	No	Riparian, Upland
Douglas Fir	*Pseudotsuga menziesii*	180'	40'	1256 sq. ft.	Large	No	Upland
Oregon White Oak	*Quercus garryana*	65'	50'	1963 sq. ft.	Large	No	Upland
Cascara	*Rhamnus purshiana*	35'	25'	491 sq. ft.	Medium	No	Riparian, Upland
Pacific Willow	*Salix lucida ssp. lasiandra*	40'	30'	707 sq. ft.	Medium	No	Wetland, Riparian
Rigid Willow	*Salix rigida var. macrogemma*	30'	20'	314 sq. ft.	Small	No	Wetland, Riparian
Scouler Willow	*Salix scouleriana*	40'	40'	1256 sq. ft.	Medium	No	Wetland, Riparian, Upland
Pacific Yew	*Taxus brevifolia*	40'	30'	707 sq. ft.	Medium	No	Riparian, Upland
Western Red Cedar	*Thuja plicata*	100'	30'	707 sq. ft.	Large	No	Wetland, Riparian, Upland
Western Hemlock	*Tsuga heterophylla*	150'	40'	1256 sq. ft.	Large	No	Riparian, Upland

Appendix 6

Nuisance Tree List

Common Name	Scientific Name
Norway Maple	*Acer platanoides*
Horse Chestnut	*Aesculus hippocastanum*
Sycamore Maple	*Acer pseudoplatanus*
Tree-of-heaven	*Ailanthus altissima*
European White Birch	*Betula pendula*
English Hawthorn	*Crataegus monogyna*
English Holly	*Ilex aquifolium*
Golden Chain Tree	*Laburnum watereri*
Princess Tree	*Paulownia tomentosa*
White poplar	*Populus alba*
Sweet Cherry	*Prunus avium*
English Laurel	*Prunus laurocerasus*
Callery Pear	*Pyrus calleryana*
Black Locust	*Robinia pseudoacacia*
European Mountain Ash	*Sorbus aucuparia*
Siberian Elm	*Ulmus pumila*



TREE PROTECTION NOTES:

A. NO CHANGES SHALL BE MADE TO ANY ASPECT OF THE APPROVED URBAN FORESTRY PLAN WITHOUT WRITTEN CONSENT FROM THE PROJECT ARBORIST AND CITY ARBORIST.

B. TIMELINE FOR CLEARING, GRADING, AND INSTALLATION OF TREE PROTECTION MEASURES: WORK WILL BEGIN WITHIN THREE (3) WEEKS OF PFT PERMIT INSURANCE BY THE CITY. TREE PROTECTION WILL BE INSTALLED PRIOR TO ANY GROUND DISTURBANCE WORK, CLEARING, AND GRADING WILL FOLLOW.

C. PLACING MATERIALS NEAR TREES. NO PERSON MAY CONDUCT ANY ACTIVITY WITHIN THE PROTECTED AREA OF ANY TREE DESIGNATED TO REMAIN, INCLUDING, BUT NOT LIMITED TO, PARKING EQUIPMENT, PLACING SOLVENTS, STORING BUILDING MATERIAL AND SOIL DEPOSITS, DUMPING CONCRETE WASHOUT AND LOCATING BURN HOLES.

D. ATTACHMENTS TO TREES DURING CONSTRUCTION – NO PERSON SHALL ATTACH ANY OBJECT TO ANY TREE DESIGNATED FOR PRESERVATION.

E. PROTECTIVE BARRIER. PRIOR TO ANY GROUND DISTURBANCE BY THE CONTRACTOR:

1. SHALL ERECT AND MAINTAIN READILY VISIBLE TREE PROTECTION FENCING ALONG THE OUTER EDGE AND COMPLETELY SURROUNDING THE PROTECTED AREA OF ALL PROTECTED TREES OR GROUPS OF TREES AS SHOWN. FENCES SHALL BE CONSTRUCTED OF 5 FOOT TALL METAL, SECURED TO EIGHT FOOT TALL METAL POSTS. POSTS SHALL NOT BE PLACED FURTHER THAN 8 FEET O.C. APART.
2. MAY BE REQUIRED TO COVER WITH MULCH TO A DEPTH OF AT LEAST SIX (6) INCHES, OR WITH PLYWOOD OR SIMILAR MATERIAL, OVER THE ROOT ZONE OF A TREE IN ORDER TO PROTECT ROOTS FROM DAMAGE CAUSED BY HEAVY EQUIPMENT.
3. SHALL PROHIBIT EXCAVATION OR COMPACTING OF EARTH OR OTHER POTENTIALLY DAMAGING ACTIVITIES WITHIN THE TREE PROTECTION ZONE.
4. MAY BE REQUIRED TO MINIMIZE ROOT DAMAGE BY EXCAVATION OF A TWO (2) FEET DEEP TRENCH, AT THE EDGE OF THE TREE PROTECTION ZONE, TO CLEANLY SEVER THE ROOTS OF TREES TO BE RETAINED.
5. MAY BE REQUIRED TO HAVE CORRECTIVE PRUNING PERFORMED ON PRESERVED TREES IN ORDER TO AVOID DAMAGE FROM MACHINERY OR BUILDING ACTIVITY. MAY BE REQUIRED TO MAINTAIN TREES THROUGHOUT CONSTRUCTION PERIOD BY WATERING AND FERTILIZING.
6. SHALL MAINTAIN THE TREE PROTECTION FENCING IN PLACE UNTIL THE PROJECT ARBORIST AND CITY ARBORIST AUTHORIZES THEIR REMOVAL.
7. SHALL ENSURE THAT ANY LANDSCAPING DONE IN THE TREE PROTECTION ZONE SUBSEQUENT TO THE REMOVAL OF THE BARRIERS SHALL BE ACCOMPLISHED WITH LIGHT MACHINERY OR HAND LABOR. USE PLANT MATERIALS WITH COMPATIBLE WATER REQUIREMENTS TO TREE TO BE PRESERVED AND DIRECT SPRAY IRRIGATION AWAY FROM TRUNKS.

F. THE GRADE SHALL NOT BE ELEVATED OR REDUCED WITHIN THE TREE PROTECTION ZONE WITHOUT THE PROJECT ARBORIST'S AUTHORIZATION. THE PROJECT ARBORIST MAY ALLOW COVERAGE OF UP TO ONE HALF OF THE AREA OF THE TREE'S ROOT ZONE WITH LIGHT SOILS (NO CLAY) TO THE MINIMUM DEPTH NECESSARY TO CARRY OUT GRADING OR LANDSCAPING PLANS, IF IT WILL NOT IMPERIL THE SURVIVAL OF THE TREE. AERATION DEVICES MAY BE REQUIRED TO ENSURE THE TREE'S SURVIVAL.

G. IF THE GRADE ADJACENT TO A PRESERVED TREE IS RAISED SUCH THAT IT COULD SLOUGH OR ERODE INTO THE TREE PROTECTION ZONE, IT SHALL BE PERMANENTLY STABILIZED TO PREVENT SUFFOCATION OF THE ROOTS.

H. AN IMPERVIOUS SURFACE SHALL NOT BE INSTALLED WITHIN THE TREE PROTECTION ZONE OF ANY TREE TO BE PRESERVED WITHOUT THE AUTHORIZATION OF THE PROJECT ARBORIST. THE PROJECT ARBORIST MAY REQUIRE SPECIFIC CONSTRUCTION METHODS AND/OR USE OF AERATION DEVICES TO ENSURE THE TREE'S SURVIVAL AND TO MINIMIZE THE POTENTIAL FOR ROOT INDUCED DAMAGE TO THE IMPERVIOUS SURFACE.

I. TO THE GREATEST EXTENT PRACTICAL, UTILITY TRENCHES SHALL BE LOCATED OUTSIDE OF THE TREE PROTECTION ZONE OF TREES TO BE PRESERVED. THE PROJECT ARBORIST MAY REQUIRE THAT UTILITIES BE TUNNELED UNDER THE ROOTS OF TREES TO BE PRESERVED IF THE PROJECT ARBORIST DETERMINES THAT TRENCHING WOULD SIGNIFICANTLY REDUCE THE CHANCES OF THE TREES SURVIVAL.

J. DIRECTIONAL FELLING. DIRECTIONAL FELLING OF TREES SHALL BE USED TO AVOID DAMAGE TO TREES DESIGNATED FOR PRESERVATION.

K. ADDITIONAL REQUIREMENTS. THE PROJECT ARBORIST MAY REQUIRE ADDITIONAL TREE PRESERVATION MEASURES WHICH ARE CONSISTENT WITH TREE CARE INDUSTRY STANDARDS.

LEGEND

- EXISTING TREE TO BE REMOVED
- EXISTING TREE DRIPLINE
- EXISTING TREE CANOPY AREA
- CANOPY AREA
- TREE PROTECTION FENCE
- EXISTING SANITARY
- PROPOSED SANITARY
- EXISTING WATER
- PROPOSED WATER
- PROPOSED WATER METER
- EXISTING WATER METER
- EXISTING STORM
- PROPOSED STORM
- EXISTING GAS
- PROPOSED GAS
- EXISTING ELECTRIC
- PROPOSED ELECTRIC
- PROPOSED IRRIGATION
- APPROXIMATE STREAM BED LOCATION
- WETLAND
- SIGNIFICANT HABITAT BOUNDARY

GENERAL NOTES:
1. ALL PORTIONS OF LOTS 1 AND 2 NOT OCCUPIED BY BUILDINGS OR PAVING TO BE LANDSCAPE AND IRRIGATED.
2. ALL NON-NATIVE VEGETATION WITHIN THE 50' STREAM BUFFER IN TRACT A TO BE REMOVED AND REPLACED WITH NATIVE VEGETATION AND TEMPORARY IRRIGATION FOR A PERIOD OF ONE YEAR OR UNTIL PLANTS ARE ESTABLISHED.

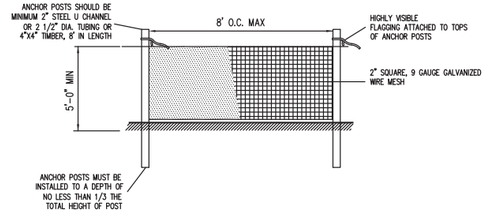
ROOT PROTECTION ZONE NOTES:

ENCROACHMENT INTO THE ROOT PROTECTION ZONE IS ALLOWED WITH PROJECT ARBORIST APPROVAL AS DESCRIBED IN THE FOLLOWING NOTES:

1. EXCAVATION IN THE TOP 24" OF THE SOIL IN THE CRITICAL ROOT ZONE AREA SHOULD BEGIN AT THE EXCAVATION LINE THAT IS CLOSEST TO THE TREE.
2. THE EXCAVATION SHOULD BE DONE BY HAND/SHOVEL OR WITH A BACKHOE AND A MAN WITH A SHOVEL, PRUNING SHEARS, AND A PRUNING SAW.
3. IF DONE BY HAND, ALL ROOTS 1" OR LARGER SHOULD BY PRUNED AT THE EXCAVATION LINE.
4. IF DONE WITH A BACKHOE (MOST LIKELY SCENARIO), THEN THE OPERATOR SHALL START THE CUT AT THE EXCAVATION LINE AND CAREFULLY "FEEL" FOR ROOTS/RESISTANCE. WHEN THERE IS RESISTANCE, THE MAN WITH THE SHOVEL HAND DIGS AROUND THE ROOTS AND PRUNES THE ROOTS LARGER THAN 1" DIAMETER.

I, JOHN ARBORIST, ATTEST THAT THIS TREE CANOPY SITE PLAN MEETS ALL OF THE REQUIREMENTS IN SECTION 10, PART 2, OF THE CITY OF TIGARD URBAN FORESTRY MANUAL.

JOHN ARBORIST, CERTIFIED ARBORIST
PNN-0000



NOTES:
1. METAL FENCE FOR TREE PROTECTION DEVICE, ONLY.
2. BOUNDARIES OF PROTECTION AREA WILL BE ESTABLISHED IN THE FIELD BY THE ARBORIST PRIOR TO CONSTRUCTION.
3. BOUNDARIES OF PROTECTION AREA SHOULD BE STAKED AND FLAGGED BY THE ARBORIST PRIOR TO INSTALLING DEVICES.
4. AVOID DAMAGE TO CRITICAL ROOT ZONE. DO NOT DAMAGE OR SEVER LARGE ROOTS WHEN INSTALLING POSTS.
5. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

METAL TREE PROTECTION FENCE

TREE PRESERVATION/REMOVAL PLAN BY JOHN ARBORIST, CERTIFIED ARBORIST #PN-0000, WITH ABC COLLABORATIVE.

DATE: 07-11-2011

REVISIONS:

EXAMPLE TREE PRESERVATION AND REMOVAL SITE PLAN

OFFICE LOCATED AT:
1000 1ST STREET, SUITE 1
TIGARD, OREGON 97223
PH: (503) 555-XXXX
FAX: (503) 555-XXXX
EMAIL: INFO@ABC_COLLABORATIVE.COM

LICENSED IN OR, WA, & ID

ABC COLLABORATIVE
ENGINEERING • ARCHITECTURE • PLANNING • LANDSCAPE ARCHITECTURE

DESIGNED BY:	KRJ	DRAWING NO.:	9A
DRAWN BY:	BDT	SCALE:	AS SHOWN
CHECKED BY:	KRJ		

PREPARED FOR: JOHN SMITH
PO BOX 111
TIGARD, OREGON 97223
PH: 503-909-5555
FAX: 503-909-5556

EVERGREEN HEIGHTS PARTITION
190 SW 147TH ST.

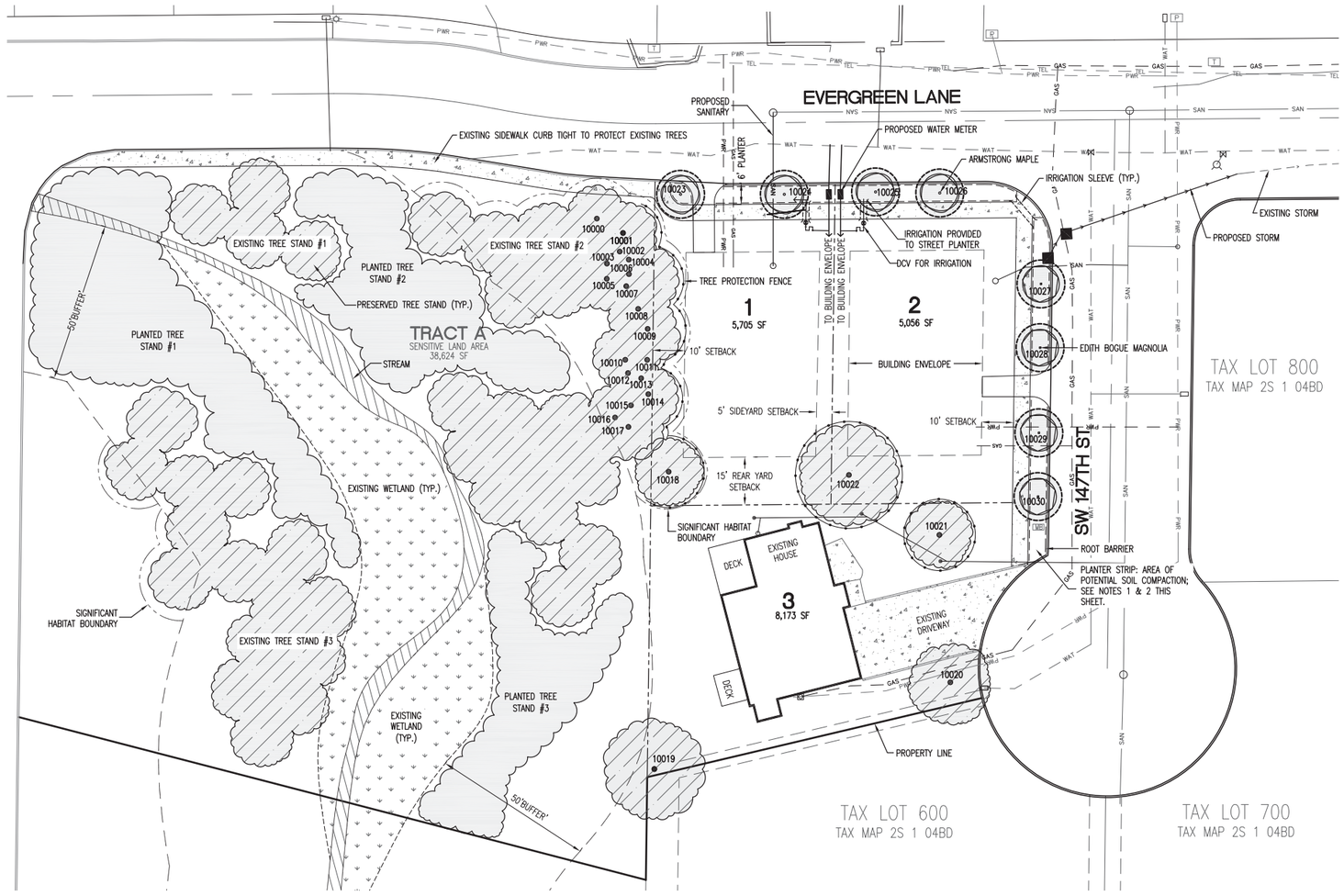
TIGARD
TAXLOT 1700

OREGON
TAXMAP 2 4E 25

CERTIFIED ARBORIST
JOHN Q. ARBORIST
CERTIFICATE NUMBER: PN 0000
EXPIRATION DATE: 01/01/00

JOB NUMBER 2001

SHEET APPENDIX 7



SCALE 1" = 20 FEET

SCALE SHOWN IS FOR FULL SIZE SHEET (24"X36") ONLY

PLANT LEGEND

STREET TREES

SYMBOL	QTIES.	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING
	3	ACER RUBRUM 'ARMSTRONG'	ARMSTRONG RED MAPLE	2" CAL.	B&B	AS SHOWN
	4	MAGNOLIA GRANDIFLORA 'EDITH BOGUE'	EDITH BOGUE MAGNOLIA	2" CAL.	B&B	AS SHOWN

NOTE:
1. PLANTER STRIP AREAS ALONG EVERGREEN LANE AND SW 147TH ARE AREAS OF POTENTIAL SOIL COMPACTION, LIMITING TREE GROWTH. IF SOIL COMPACTION OCCURS, BACKHOE TURNING SHOULD BE USED TO LOOSEN SOIL.
2. BACKHOE TURNING: REMOVE ANY LAYERS OF GOOD TOPSOIL. SPREAD 3"–4" OF ORGANICS (HIGH–LIGNIN COMPOST) OR ESCS (EXPANDED SHALE/CALCINE CLAY) AMENDMENT OVER THE AREA, PRIOR TO TURNING THE SOIL. MAINTAINING A SAFE DISTANCE FROM PAVING, SIDEWALKS, AND STRUCTURES, USE BACKHOE TO TURN SOIL TO 36" DEPTH. BREAK SOIL INTO LARGE PEDS AND LOOSELY INCORPORATE THE SOIL AMENDMENT. MAINTAIN A SLOPE OF COMPACTED SOIL AT THE EDGE OF OF PAVING SO AS NOT TO UNDERMINE THE PAVING SUB–BASE. HAND TURNING MAY BE NECESSARY ALONG THE EDGES OF PAVING AND AT WALLS, DO NOT TILL TO A DEPTH GREATER THAN THE BOTTOM OF FOOTING. AFTER TURNING, RE–SPREAD TOPSOIL AND ADD 3"–5" OF YARD WASTE ORGANIC AMENDMENT OVER THE SURFACE AND LIGHTLY TILL TO BREAK THE SOIL INTO TEXTURE SUITABLE TO FINE GRADE.

LEGEND

- EXISTING TREE DRIPLINE
- PLANTED TREE MATURE DRIPLINE
- EXISTING TREE CANOPY AREA
- CANOPY AREA
- TREE PROTECTION FENCE
- EXISTING SANITARY
- PROPOSED SANITARY
- EXISTING WATER
- PROPOSED WATER
- PROPOSED WATER METER
- EXISTING WATER METER
- EXISTING STORM
- PROPOSED STORM
- EXISTING GAS
- PROPOSED GAS
- EXISTING ELECTRIC
- PROPOSED ELECTRIC
- PROPOSED IRRIGATION
- APPROXIMATE STREAM BED LOCATION
- WETLAND
- SIGNIFICANT HABITAT BOUNDARY

I, JOHN ARBORIST, ATTEST THAT THIS TREE CANOPY SITE PLAN MEETS ALL OF THE REQUIREMENTS IN SECTION 10, PART 2, OF THE CITY OF TIGARD URBAN FORESTRY MANUAL.

JOHN ARBORIST, CERTIFIED ARBORIST
PNN–0000

DATE: 07–11–2011

REVISIONS:

EXAMPLE TREE CANOPY SITE PLAN

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CERTIFIED ARBORIST
JOHN Q. ARBORIST
CONTRACTOR NUMBER: PN–7000
EXPIRATION DATE: 01/31/00

JOB NUMBER
2001

SHEET
APPENDIX 8

Urban Forestry Plan –Supplemental Report Example Template

General Information

Date:
Project Name:
Project Arborist or Landscape Architect Name:
Project Arborist or Landscape Architect Address:
Project Arborist or Landscape Architect Telephone Number:
Project Arborist or Landscape Architect Email Address:
ISA Certified Arborist No.:
Landscape Architect Stamp:

Project Summary

Specifications

Tree Protection Fencing Specifications:

Tree Preservation Specifications:

Stand Preservation Specifications:

Soil Characteristics and Specifications for Improvement:

Tree Planting Specifications:

Stand Planting Specifications:

Urban Forestry Plan –Supplemental Report Example Template

Existing Tree Inventory

Tree #	Genus sp./ Common	DBH	Canopy (ft^2)	Open or Stand Grown	Heritage Tree?	Cond. Rating	Pres. Rating	Preserve?	Comments

Existing Stand Inventory

Stand #	Genus sp./ Common of Dominant	Avg. DBH 1	Avg. Cond. Rating 1	Overall Stand Pres. Rating	Total Canopy (ft^2)	Canopy Preserved (ft^2)	Comments
	Genus sp./ Common of 2nd	Avg. DBH 2	Avg. Cond. Rating 2				
	Genus sp./ Common of 3rd	Avg. DBH 3	Avg. Cond. Rating 3				

Urban Forestry Plan –Supplemental Report Example Template

Planted Tree Inventory

Tree #	Genus sp./ Common	Caliper (Decid.) or Height (Evergreen)	Mature Canopy Spread (ft)	Mature Canopy Area (ft^2)	Available Soil Volume (ft^3)	Comments

Planted Stand Inventory

Stand #	Genus sp./Common 1	Hgt. or Container size	No. of Trees	Avg. Spacing (ft)	Total Mature Canopy Area (ft^2) Delineated at the Outer Edge of the Stand	Comments
	Genus sp./Common 2	Hgt. or Container size	No. of Trees	Avg. Spacing (ft)		
	Genus sp./Common 3	Hgt. or Container size	No. of Trees	Avg. Spacing (ft)		
	Genus sp./Common 4	Hgt. or Container size	No. of Trees	Avg. Spacing (ft)		
	Genus sp./Common 5	Hgt. or Container size	No. of Trees	Avg. Spacing (ft)		

Urban Forestry Plan –Supplemental Report Example Template

Effective Tree Canopy Cover Summary

*Lot # (exclude streets)	Lot Area (ft^2)	2x Canopy Area (ft^2) of Preserved Trees (w/ cond. and pres.≥2)	2x Canopy Area (ft^2) of Preserved Stands (w/ cond. and pres.≥2)	1.5x Canopy Area (ft^2) of Preserved Native Trees < 6-inch DBH	Mature Canopy Area (ft^2) of Non-Native Planted Trees	1.25x Mature Canopy Area (ft^2) of Native Planted Trees	1.25x Mature Canopy Area (ft^2) of Planted Stands	Total Canopy Area (ft^2) per lot	Effective % Canopy (Canopy Area ÷ Lot Area)
Total									

*Note: effective tree canopy cover must be calculated for each lot designated for single detached house development in the R-1, R-2, R-3.5, R-4.5 and R-7 zones.

The minimum requirements for effective tree canopy cover are outlined below:

- Subdivisions and land partitions:
  - 40 percent for the overall development site in the R-1, R-2, R-3.5, R-4.5 and R-7 zones, and 15 percent for each lot designated for single detached house development.
  - 33 percent for the overall development site in the R-12, R-25, and R-40 zones.
- Apartments: 33 percent for the overall development site.
- Nonresidential development: 33 percent for the overall development site, except nonresidential development in the MU-CBD, MUC-1, I-L, and I-H zones and schools (as defined in TCDC Section 18.60.050.J) are only required to provide 25 percent for the overall development site.
- Mobile home parks: 33 percent for the overall development site.
- Wireless communication facilities: zero percent for the overall development site.

Urban Forestry Plan –Supplemental Report Example Template

Tree Canopy Fee Calculation (if applicable)

If the percentage of effective tree canopy cover is less than the applicable standard percentage for the overall development:

1. Find the required ft^2 of tree canopy:
   (overall development site area) x (standard required % (40%, 33%, or 25%)).
2. Find the ft^2 of tree canopy the development is short:
   (required ft^2 of tree canopy from 1 above) - (proposed ft^2 of tree canopy).
3. Find the $ value of tree canopy:
   (PNW-ISA wholesale median cost for a 3" deciduous tree in the Willamette Valley) ÷ 59.
4. Find the required tree canopy fee:
   (amount of ft^2 of tree canopy from 2 above) x (the $ value of tree canopy from 3 above).

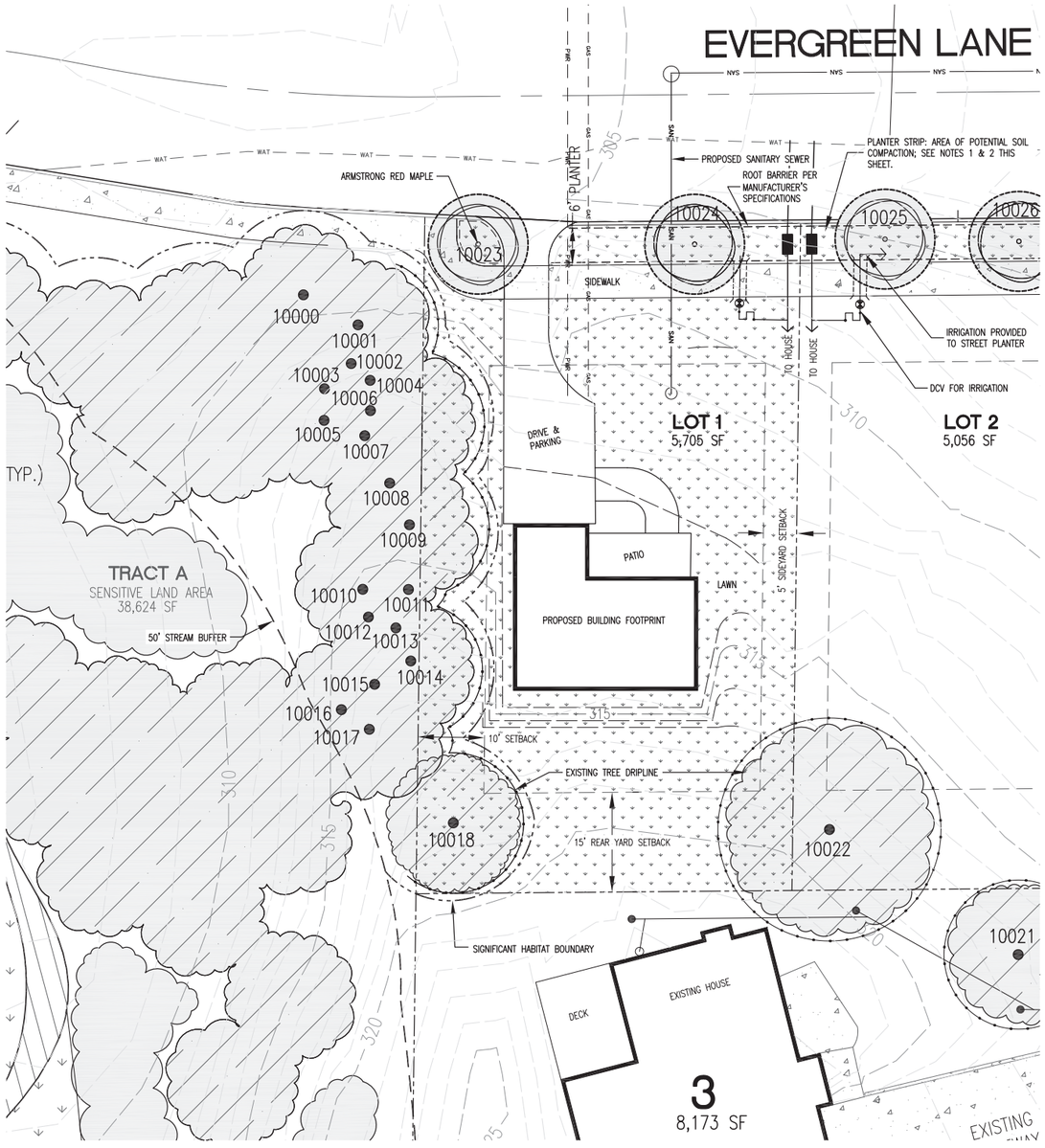
If the overall development meets the applicable standard percentage, but the percentage of effective tree canopy cover is less than 15% for any individual lot designated for single detached house development in the R-1, R-2, R-3.5, R-4.5 and R-7 zones:

1. Find the required ft^2 of tree canopy for the deficient lot:
   (lot area) x 15%.
2. Find the ft^2 of tree canopy the lot is short:
   (required ft^2 of tree canopy from 1 above) - (proposed ft^2 of tree canopy).
3. Find the $ value of tree canopy:
   (PNW-ISA wholesale median cost for a 3" deciduous tree in the Willamette Valley) ÷ 59.
4. Find the required tree canopy fee:
   (amount of ft^2 of tree canopy from 2 above) x (the $ value of tree canopy from 3 above).

Signature of Approval

I hereby attest that:

1. The Tree Preservation and Removal site plan meets all of the requirements in Section 10, Part 1 of the Urban Forestry Manual;
2. The Tree Canopy site plan meets all of the requirements in Section 10, Part 2 of the Urban Forestry Manual; and
3. The Supplemental Report meets all of the requirements in Section 10, Part 3 of the Urban Forestry Manual.



SCALE 1" = 10 FEET

SCALE SHOWN IS FOR FULL SIZE SHEET (24"X36") ONLY

STREET TREES

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING
	ACER RUBRUM 'ARMSTRONG'	ARMSTRONG RED MAPLE	2" CAL.	B&B	AS SHOWN

NOTE:
1. PLANTER STRIP AREAS ALONG EVERGREEN LANE AND SW 147TH ARE AREAS OF POTENTIAL SOIL COMPACTION, LIMITING TREE GROWTH. IF SOIL COMPACTION OCCURS, BACKHOE TURNING SHOULD BE USED TO LOOSEN SOIL.
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- PROPOSED WATER METER
- EXISTING WATER METER
- EXISTING STORM
- PROPOSED STORM
- EXISTING GAS
- PROPOSED GAS
- EXISTING ELECTRIC
- PROPOSED ELECTRIC
- PROPOSED IRRIGATION
- SIGNIFICANT HABITAT BOUNDARY

DATE: 07–11–2011

REVISIONS:

EXAMPLE TREE CANOPY SITE PLAN FOR SINGLE LOT

OFFICE LOCATED AT:
1000 1ST STREET, SUITE 1
TIGARD, OREGON 97223
PH: (503) 555–XXXX
FAX: (503) 555–XXXX
EMAIL: INFOMABC_COLLABORATIVE.COM

LICENSED IN OR, WA, & ID

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DESIGNED BY:	KRJ	DRAWING NO.:	9A
DRAWN BY:	BDT	SCALE:	AS SHOWN
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EVERGREEN HEIGHTS PARTITION
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TIGARD
TAXLOT 1700

OREGON
TAXMAP 2 4E 25

CERTIFIED ARBORIST
JOHN Q. ARBORIST
CERTIFICATE NUMBER: PN 1000
EXPIRATION DATE: 07/31/00

JOB NUMBER
2001

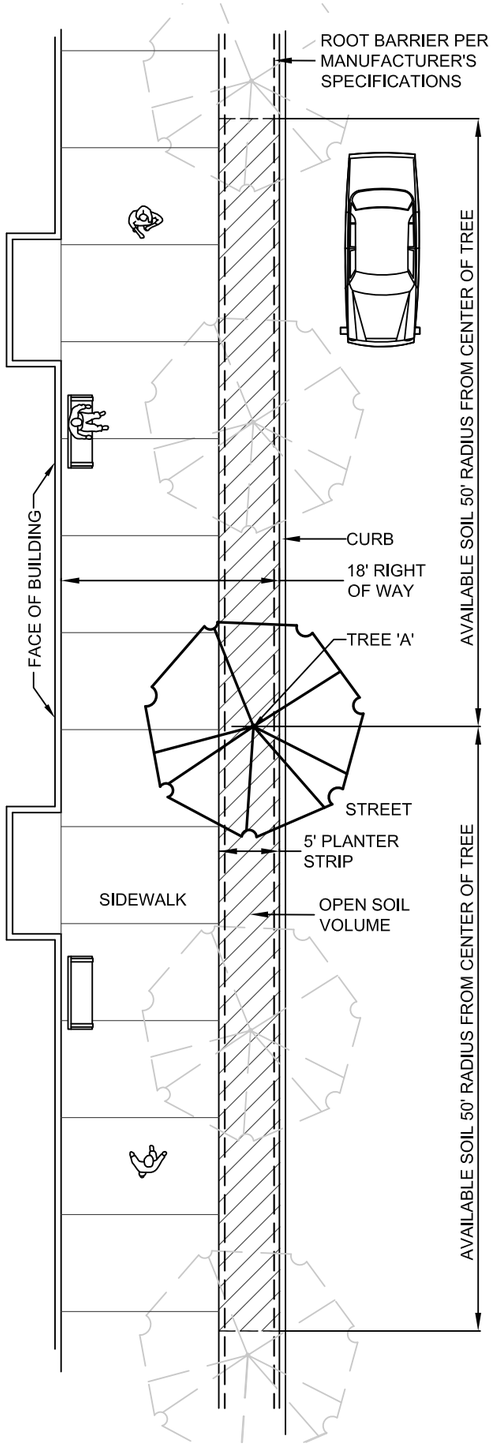
SHEET
APPENDIX 10

TOTAL SOIL VOLUME CALCULATION FOR TREE 'A':

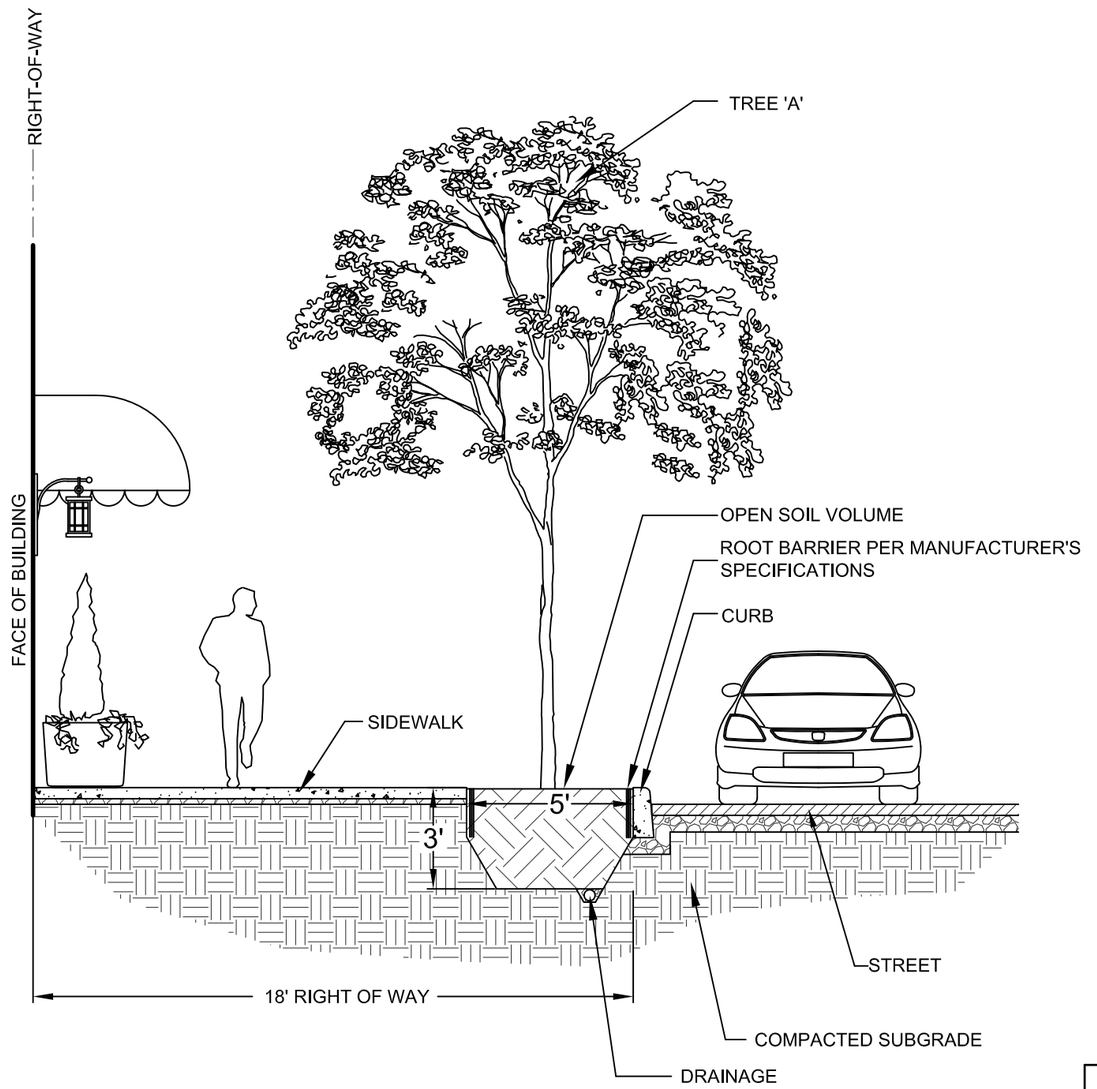
OPEN SOIL VOLUME = 100' x 5' x 3' = 1,500 C.F.
COVERED SOIL VOLUME = 0 C.F.

TOTAL SOIL VOLUME = 1,500 C.F.

1,500 C.F. IS GREATER THAN THE SOIL VOLUME REQUIRED BY A STREET TREE IN AN 18' RIGHT OF WAY (800 C.F.) THEREFORE THIS SOIL VOLUME MEETS CITY REQUIREMENTS.



PLAN



PROFILE

EXAMPLE SOIL VOLUME CALCULATION – STREET TREE WITH OPEN SOIL

NO SCALE

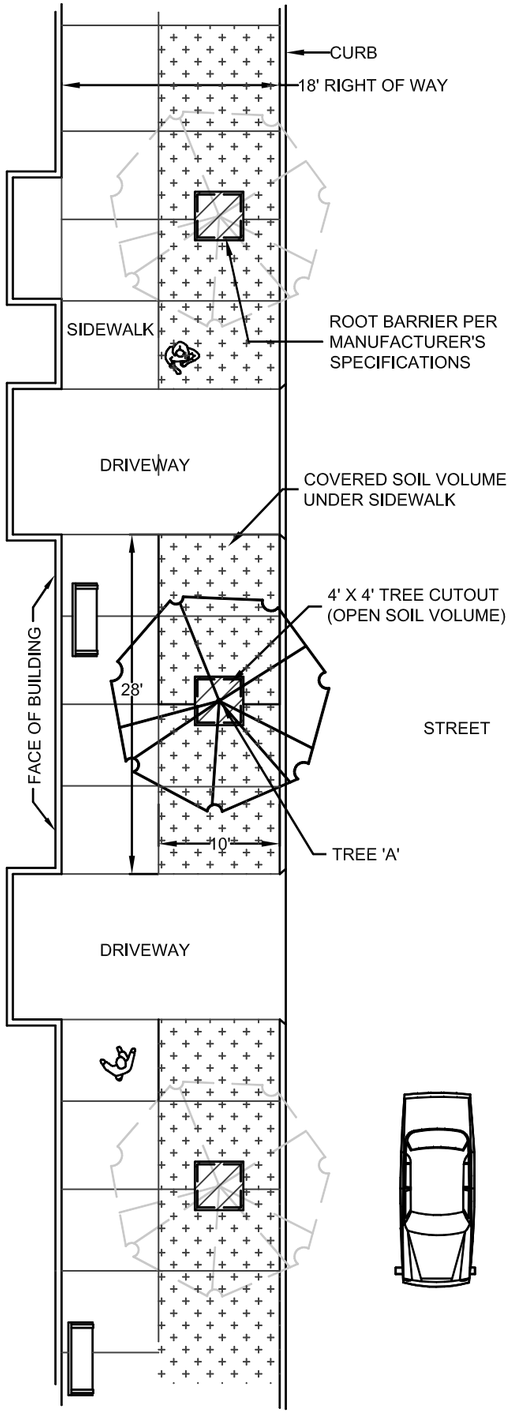
DWG. NO.
APPENDIX 11

TOTAL SOIL VOLUME CALCULATION FOR TREE 'A':

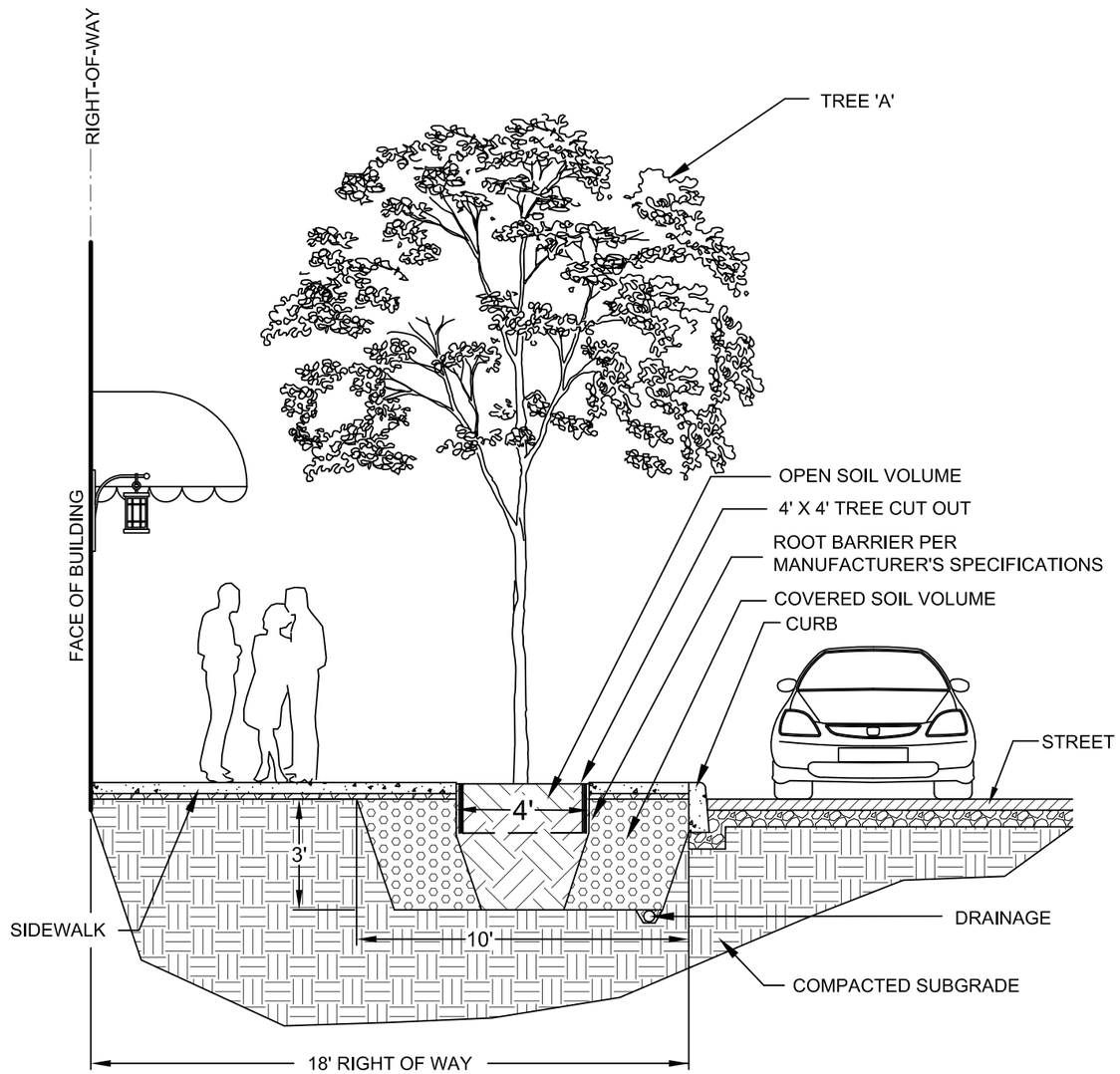
OPEN SOIL VOLUME = 4' x 4' x 3' = 48 C.F.
COVERED SOIL VOLUME = 28' x 10' x 3' - 48 C.F. = 792 C.F.

TOTAL SOIL VOLUME = 840 C.F.

840 C.F. IS GREATER THAN THE SOIL VOLUME REQUIRED BY A STREET TREE IN AN 18' RIGHT OF WAY (800 C.F.) THEREFORE THIS SOIL VOLUME MEETS CITY REQUIREMENTS.



PLAN



PROFILE

EXAMPLE SOIL VOLUME CALCULATION – STREET TREE WITH COVERED SOIL

NO SCALE

DWG. NO.
APPENDIX 11

OPEN SOIL VOLUME = (PLANTER STRIP AREA + FRONT YARD AREA CONNECTED BY THE COVERED CONTINUOUS ROOT PATH) x SOIL DEPTH

PLANTER STRIP AREA = 6 FEET X 22 FEET = 132 S. F.

AREA CONNECTED BY CONTINUOUS ROOT PATH = 4,000 S.F.

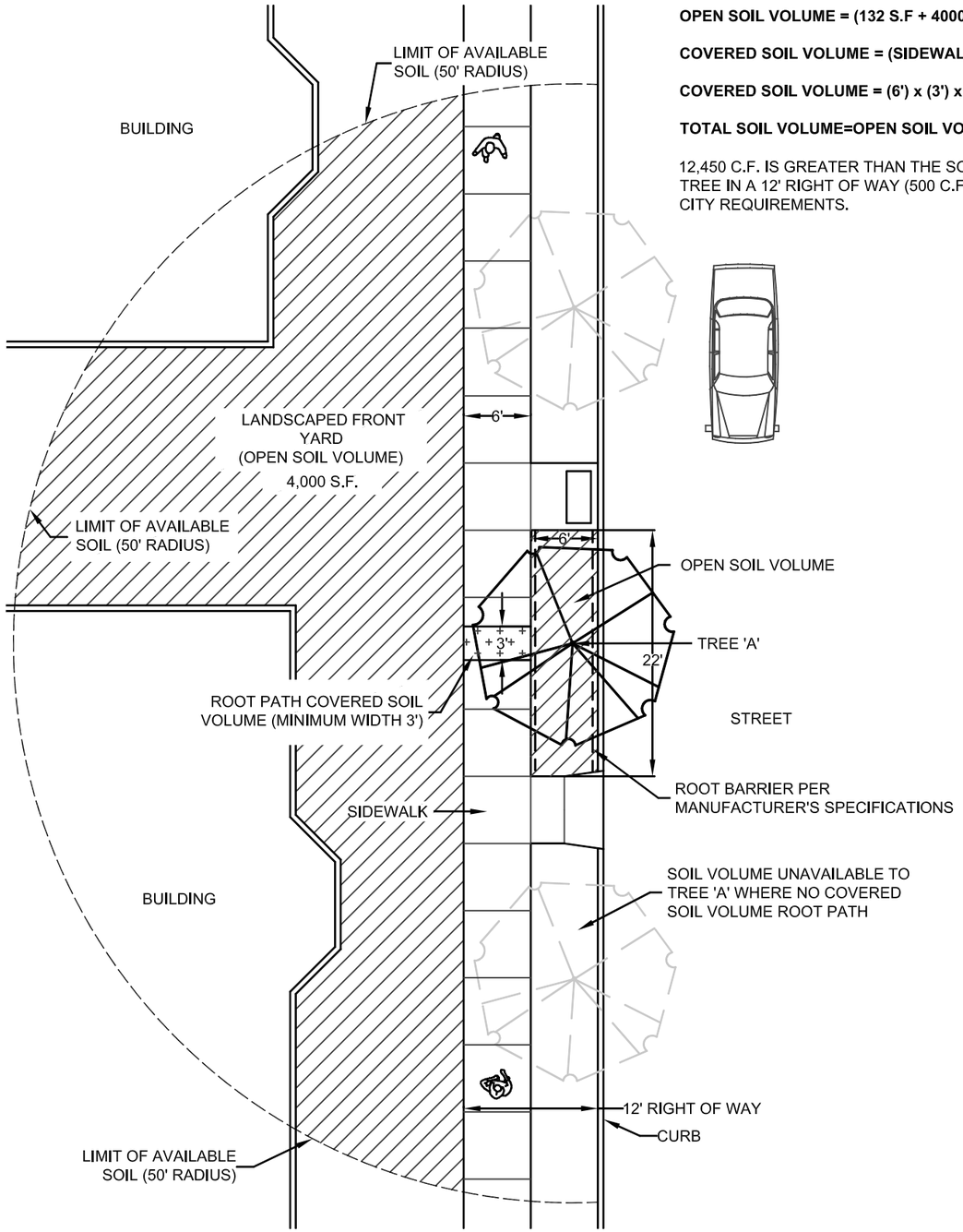
OPEN SOIL VOLUME = (132 S.F + 4000 S.F.) x 3'=12,396 C.F.

COVERED SOIL VOLUME = (SIDEWALK WIDTH) x (SIDEWALK LENGTH) x (STRUCTURAL SOIL DEPTH)

COVERED SOIL VOLUME = (6') x (3') x (3') = 54 C.F.

TOTAL SOIL VOLUME=OPEN SOIL VOLUME + COVERED SOIL VOLUME = 12,396 C.F. + 54 C.F.=12,450 C.F.

12,450 C.F. IS GREATER THAN THE SOIL VOLUME REQUIRED BY A STREET TREE IN A 12' RIGHT OF WAY (500 C.F.) THEREFORE THIS SOIL VOLUME MEETS CITY REQUIREMENTS.



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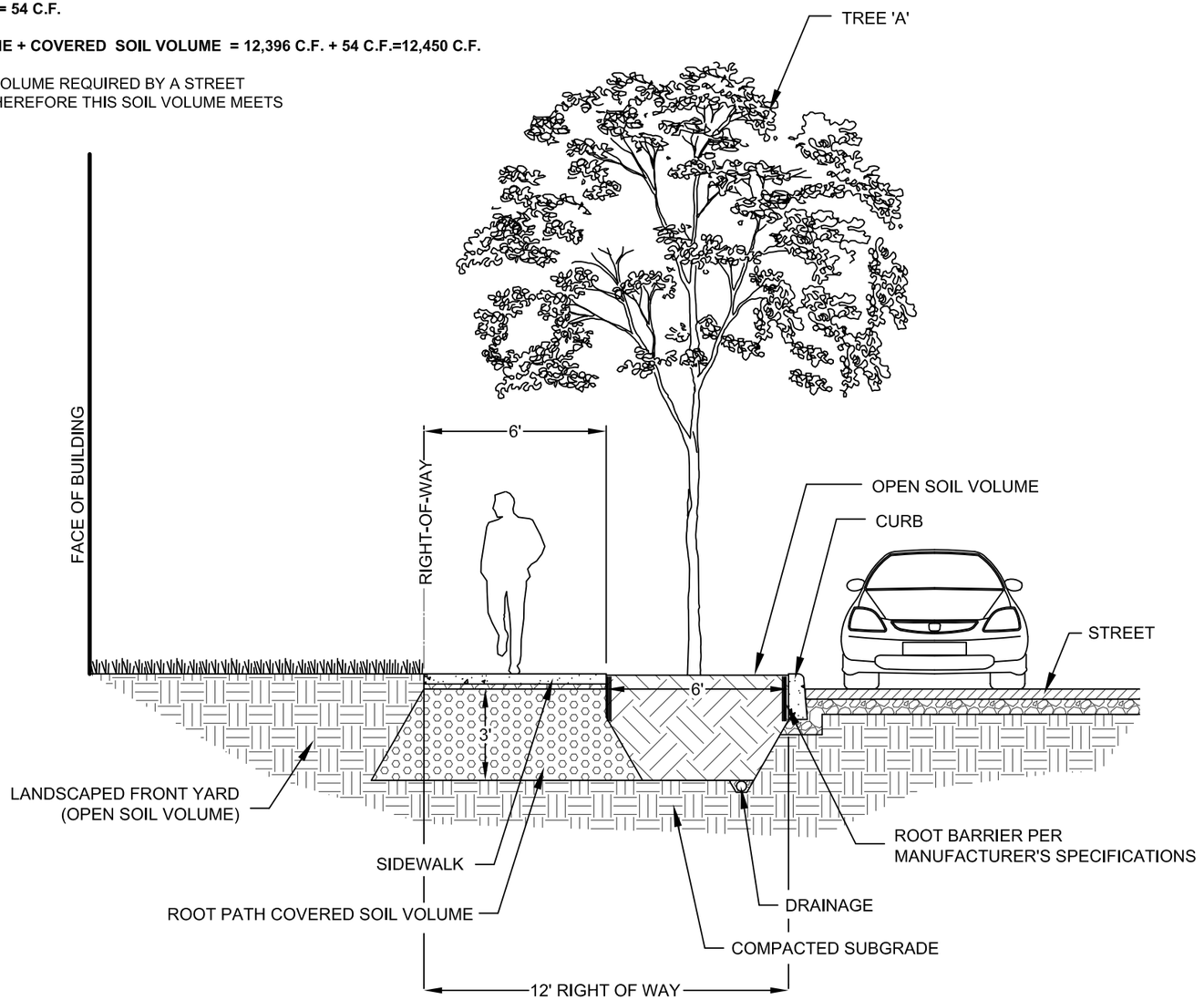


PROFILE

EXAMPLE SOIL VOLUME CALCULATION – STREET TREE WITH ROOT PATH

NO SCALE

DWG. NO.
APPENDIX 11

STREET TREE LEGEND

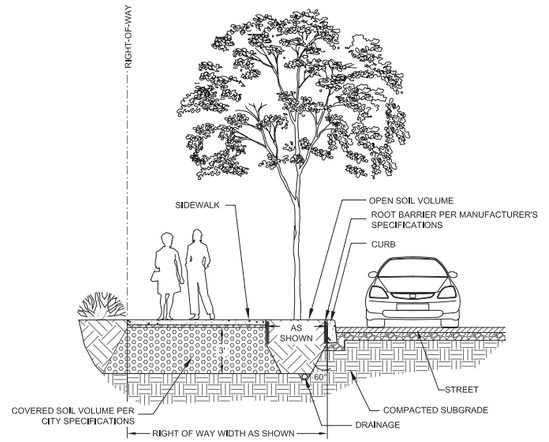
SYMBOL	QTIES.	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING
	11	ACER RUBRUM	RED MAPLE	3" CAL.	B&B	AS SHOWN

OPEN SOIL VOLUME

COVERED SOIL VOLUME

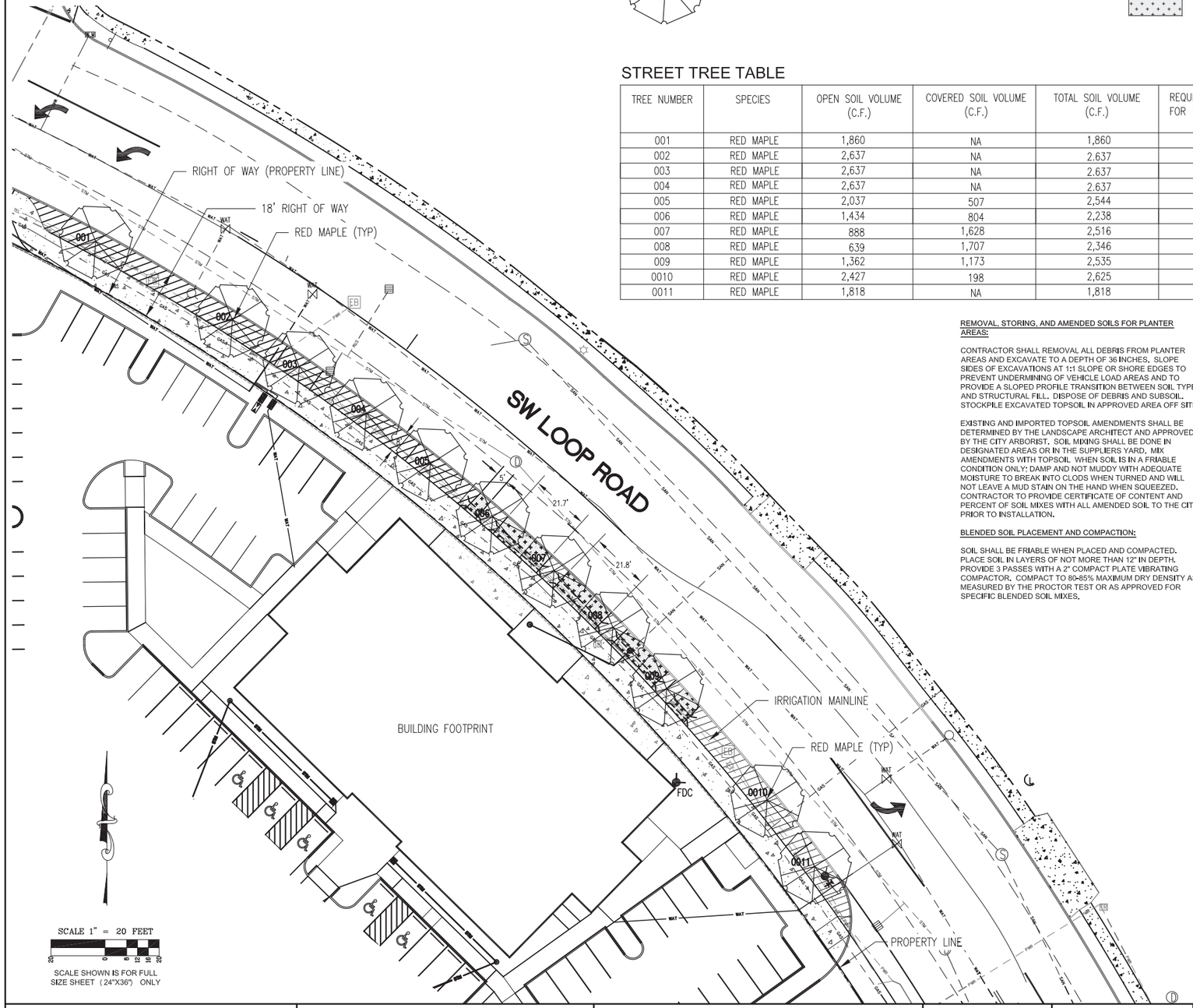
STREET TREE TABLE

TREE NUMBER	SPECIES	OPEN SOIL VOLUME (C.F.)	COVERED SOIL VOLUME (C.F.)	TOTAL SOIL VOLUME (C.F.)	REQUIRED SOIL VOLUME FOR 18' RIGHT OF WAY (C.F.)
001	RED MAPLE	1,860	NA	1,860	800
002	RED MAPLE	2,637	NA	2,637	800
003	RED MAPLE	2,637	NA	2,637	800
004	RED MAPLE	2,637	NA	2,637	800
005	RED MAPLE	2,037	507	2,544	800
006	RED MAPLE	1,434	804	2,238	800
007	RED MAPLE	888	1,628	2,516	800
008	RED MAPLE	639	1,707	2,346	800
009	RED MAPLE	1,362	1,173	2,535	800
0010	RED MAPLE	2,427	198	2,625	800
0011	RED MAPLE	1,818	NA	1,818	800



1 STREET TREE WITH COVERED SOIL DETAIL

NOT TO SCALE



REMOVAL, STORING, AND AMENDED SOILS FOR PLANTER AREAS:

CONTRACTOR SHALL REMOVAL ALL DEBRIS FROM PLANTER AREAS AND EXCAVATE TO A DEPTH OF 36 INCHES. SLOPE SIDES OF EXCAVATIONS AT 1:1 SLOPE OR SHORE EDGES TO PREVENT UNDERMINING OF VEHICLE LOAD AREAS AND TO PROVIDE A SLOPED PROFILE TRANSITION BETWEEN SOIL TYPES AND STRUCTURAL FILL. DISPOSE OF DEBRIS AND SUBSOIL. STOCKPILE EXCAVATED TOPSOIL IN APPROVED AREA OFF SITE.

EXISTING AND IMPORTED TOPSOIL AMENDMENTS SHALL BE DETERMINED BY THE LANDSCAPE ARCHITECT AND APPROVED BY THE CITY ARBORIST. SOIL MIXING SHALL BE DONE IN DESIGNATED AREAS OR IN THE SUPPLIERS YARD. MIX AMENDMENTS WITH TOPSOIL WHEN SOIL IS IN A FRIABLE CONDITION ONLY: DAMP AND NOT MUDDY WITH ADEQUATE MOISTURE TO BREAK INTO CLODS WHEN TURNED AND WILL NOT LEAVE A MUD STAIN ON THE HAND WHEN SQUEEZED. CONTRACTOR TO PROVIDE CERTIFICATE OF CONTENT AND PERCENT OF SOIL MIXES WITH ALL AMENDED SOIL TO THE CITY PRIOR TO INSTALLATION.

BLENDED SOIL PLACEMENT AND COMPACTION:

SOIL SHALL BE FRIABLE WHEN PLACED AND COMPACTED. PLACE SOIL IN LAYERS OF NOT MORE THAN 12" IN DEPTH. PROVIDE 3 PASSES WITH A 2" COMPACT PLATE VIBRATING COMPACTOR. COMPACT TO 80-85% MAXIMUM DRY DENSITY AS MEASURED BY THE PROCTOR TEST OR AS APPROVED FOR SPECIFIC BLENDED SOIL MIXES.

STANDARD COVERED SOIL VOLUME SPECIFICATIONS:

PART 1. COVERED SOIL MATERIALS

A. COVERED SOIL SHALL CONSIST OF THE FOLLOWING MIXTURE OF GRAVEL, SOIL AND ADMIXTURES:

I. CRUSHED ROCK, GRADATION OF 100% PASSING 1.25 INCH, MAX, 30% PASSING 0.75 INCH;
II. LOAM/ORGANIC TOPSOIL;
III. SOIL BINDER SUCH AS , STABILIZER, ; AND
IV. WATER.

PART 2. PROPORTIONS OF COVERED SOIL MATERIALS

A. THE PROPORTIONS OF COVERED SOIL MATERIALS SHALL BE AS FOLLOWS:

MATERIAL	AMOUNT FOR 1 CY OF COVERED SOIL	AMOUNT FOR 4.6 CY OF COVERED SOIL
CRUSHED ROCK	23.2 CUBIC FEET	4 CUBIC YARDS
TOPSOIL	5.9 CUBIC FEET	1 CUBIC YARD
SOIL BINDER	13.7 OZ	4 LBS
WATER	1.6 GALLON	46 GALLONS

B. THE TARGET MOISTURE CONTENT IS 20% BY WEIGHT OF THE TOPSOIL WEIGHT. THE ABOVE WATER CONTENTS ASSUME THE TOP IS DRY. THE AMOUNT OF WATER THAT WILL NEED TO BE ADDED WILL BE DEPENDENT ON THE MOISTURE CONTENT OF THE RAW MATERIALS. ACTUAL AMOUNTS OF WATER USED SHALL BE DETERMINED DURING MIXING.

PART 3. COVERED SOIL MIXING PROCEDURES

A. MIX COVERED SOIL IN BATCHES OF AN APPROPRIATE SIZE FOR THE EQUIPMENT BEING USED. THE END RESULT IS TO BE A MATERIAL THAT IS UNIFORMLY BLENDED TOGETHER. DO NOT BATCH IN QUANTITIES THAT WILL NOT ALLOW THE EQUIPMENT TO COMPLETELY MIX THE MATERIAL. DETERMINE BATCH SIZE AND QUANTITIES OF EACH MATERIAL NEEDED FOR THE BATCH.
B. START WITH HALF OF THE CRUSHED ROCK MATERIAL.
C. ADD ALL OF THE TOPSOIL MATERIAL.
D. ADD THE SOIL BINDER.
E. ADD HALF OF THE ESTIMATED WATER.
F. ADD THE OTHER HALF OF THE CRUSHED ROCK MATERIAL.
G. MIX THE MATERIAL TOGETHER.
H. SLOWLY ADD WATER TO THE MIXTURE AND CONTINUE TO MIX. THE FINAL AMOUNT OF WATER WILL VARY WITH MOISTURE CONTENT OF THE CRUSHED ROCK AND TOPSOIL. ADD WATER IN INCREMENTAL AMOUNTS AND MIX THE MATERIAL BETWEEN THE ADDITIONS OF WATER.
I. STOP ADDING WATER AND MIXING WHEN THERE IS A MINUTE AMOUNT OF FREE TOPSOIL REMAINING. THE TOPSOIL WILL COAT THE CRUSHED ROCK AND NOT FALL OUT OF THE MATERIAL. ALL OF THE CRUSHED ROCK SHALL BE UNIFORMLY COATED WITH TOPSOIL. THERE SHALL BE NO CLUMPS OF TOPSOIL OR UNCOVERED CRUSHED ROCK IN THE MIXTURE.
J. IF TOO MUCH WATER IS ADDED TO THE MIXTURE, WATER WILL DRAIN OUT OF THE MATERIAL AND THE TOPSOIL WILL WASH OFF OF THE CRUSHED ROCK. IF THIS OCCURS THE BATCH OF MATERIAL SHALL BE DISCARDED AND SHALL NOT BE INCORPORATED INTO THE COMPLETED WORK.

PART 4. PLACEMENT OF COVERED SOIL

A. PROTECT SOILS AND MIXES FROM ABSORBING EXCESS WATER AND FROM EROSION AT ALL TIMES. DO NOT STORE MATERIALS UNPROTECTED FROM RAINFALL EVENTS. DO NOT ALLOW EXCESS WATER TO ENTER SITE PRIOR TO COMPACTION. IF WATER IS INTRODUCED INTO THE MATERIAL AFTER GRADING, ALLOW MATERIAL TO DRAIN OR AERATE TO OPTIMUM COMPACTION MOISTURE CONTENT.
B. ALL AREAS TO RECEIVE COVERED SOIL MIXTURE SHALL BE INSPECTED BY THE PROJECT LANDSCAPE ARCHITECTAND/OR PROJECT ENGINEER BEFORE STARTING PLACEMENT OF MIXTURE. ALL DEFECTS SUCH AS INCORRECT GRADING, COMPACTION AND INADEQUATE DRAINAGE, ETC., SHALL BE CORRECTED PRIOR TO BEGINNING PLACEMENT OF COVERED SOIL.
C. CONFIRM THAT THE SUB-GRADE IS AT THE PROPER ELEVATION AND COMPACTED AS REQUIRED. SUB-GRADE ELEVATIONS SHALL SLOPE PARALLEL TO THE FINISHED GRADE. CLEAR THE EXCAVATION OF ALL CONSTRUCTION DEBRIS, TRASH, RUBBLE AND FOREIGN MATERIAL. FILL ANY OVER EXCAVATION WITH APPROVED FILL AND COMPACT TO THE REQUIRED SUB-GRADE COMPACTION.
D. INSTALL COVERED SOIL IN 6-INCH LIFTS AND SPREAD UNIFORMLY OVER THE AREA. COMPACT EACH LIFT TO THE REQUIRED PERCENT OF MAXIMUM DENSITY. DELAY PLACEMENT 24 HOURS IF MOISTURE CONTENT EXCEEDS MAXIMUM ALLOWABLE. PROTECT COVERED SOIL WITH PLASTIC OR PLYWOOD DURING DELAY. TAKE PARTICULAR CARE NOT TO DAMAGE UTILITIES WHEN INSTALLING COVERED SOIL. COVERED SOIL THAT WILL BE THE BEDDING FOR UTILITY LINES SHALL BE COMPACTED TO CONFORM TO THE REQUIRED GRADE OF THE UTILITY LINE. DO NOT COMPACT THE IMMEDIATE VICINITY ABOVE A UTILITY LINE UNTIL A FILL DEPTH OF AT LEAST 12-INCHES ABOVE THE UTILITY LINE IS REACHED.
E. BRING COVERED SOILS TO FINISHED GRADES AS SHOWN IN THE APPROVED DRAWINGS. IMMEDIATELY PROTECT THE COVERED SOIL MATERIAL FROM CONTAMINATION BY WATER BY COVERING WITH PLASTIC OR PLYWOOD.

DATE: 07-11-2011

REVISIONS:

EXAMPLE SOIL VOLUME PLAN

OFFICE LOCATED AT:
1000 1ST STREET, SUITE 1
TIGARD, OREGON 97223
PH: (503) 555-XXXX
FAX: (503) 555-XXXX
EMAIL: INFO@ABC_COLLABORATIVE.COM

LICENSED IN OR, WA, & ID

ABC COLLABORATIVE
ENGINEERING • ARCHITECTURE • PLANNING • LANDSCAPE ARCHITECTURE

DESIGNED BY:	JMII	DRAWING NO.:	2A.DWG
DRAWN BY:	SMH	SCALE:	AS NOTED
CHECKED BY:	JMII		

PREPARED FOR: HANCOCK ASSOCIATES
1500 SW LOOP ROAD
TIGARD, OR 97223

LOOP ROAD IMPROVEMENTS
1011 SW LOOP ROAD

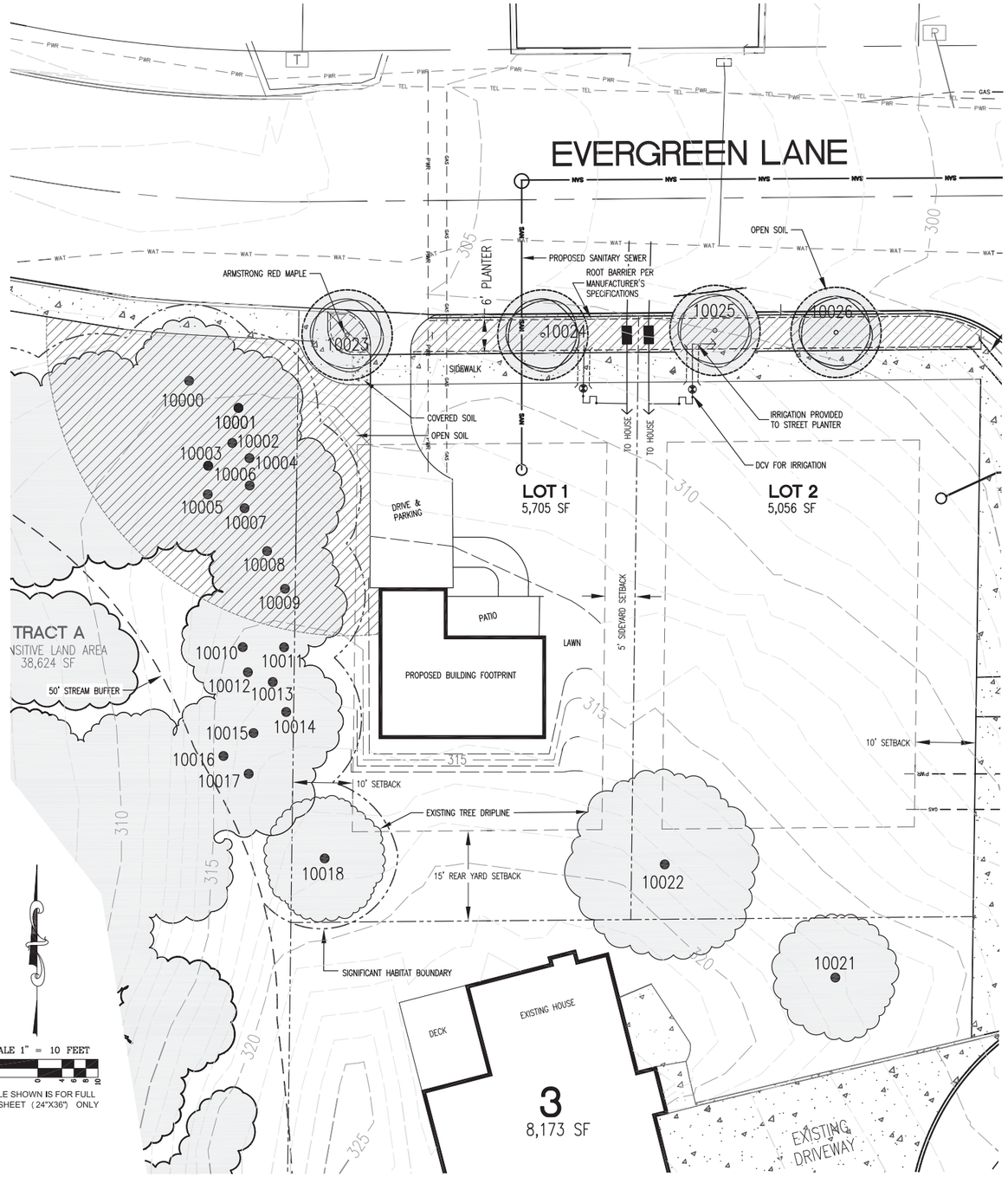
TIGARD
TAX LOT 1000

OREGON
TAX MAP: 2S 1 09AB

REGISTERED LANDSCAPE ARCHITECT
XX
JOHN H. DOE
OREGON

JOB NUMBER 1000

SHEET APPENDIX 12



SOIL LEGEND

OPEN SOIL VOLUME

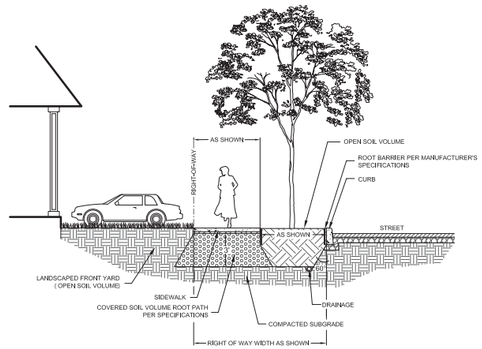
COVERED SOIL VOLUME

SOIL VOLUME CALCULATION FOR STREET TREES ADJACENT TO LOT 1

TREE NUMBER	SPECIES	OPEN SOIL VOLUME (C.F.)	COVERED SOIL VOLUME (C.F.)	TOTAL SOIL VOLUME (C.F.)	REQUIRED SOIL VOLME FOR 11' RIGHT OF WAY (C.F.)
10023	ARMSTRONG MAPLE	6,453	45	6,498	500
10024	ARMSTRONG MAPLE	OVER 1,000	0	OVER 1,000	500

STREET TREE LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME	CONDITION	SIZE	SPACING
	ACER RUBRUM 'ARMSTRONG'	ARMSTRONG MAPLE	B&B	2" CAL.	AS SHOWN



1 STREET TREE WITH COVERED SOIL DETAIL
NOT TO SCALE

ROOT PROTECTION ZONE NOTES

ENCROACHMENT INTO THE ROOT PROTECTION ZONE IS ALLOWED WITH PROJECT ARBORIST APPROVAL AS DESCRIBED IN THE FOLLOWING NOTES:

1. EXCAVATION IN THE TOP 24" OF THE SOIL IN THE CRITICAL ROOT ZONE AREA SHOULD BEGIN AT THE EXCAVATION LINE THAT IS CLOSEST TO THE TREE.

2. THE EXCAVATION SHOULD BE DONE BY HAND/SHOVEL OR WITH A BACKHOE AND A MAN WITH A SHOVEL, PRUNING SHEARS, AND A PRUNING SAW.

3. IF DONE BY HAND, ALL ROOTS 1" OR LARGER SHOULD BY PRUNED AT THE EXCAVATION LINE.

4. IF DONE WITH A BACKHOE (MOST LIKELY SCENARIO), THEN THE OPERATOR SHALL START THE CUT AT THE EXCAVATION LINE AND CAREFULLY "FEEL" FOR ROOTS/RESISTANCE. WHEN THERE IS RESISTANCE, THE MAN WITH THE SHOVEL HAND DIGS AROUND THE ROOTS AND PRUNES THE ROOTS LARGER THAN 1" DIAMETER.

IRRIGATION:

IRRIGATION TO BE 'DESIGN-BUILD' BY THE LANDSCAPE CONTRACTOR. PROVIDE PLANS TO THE CITY FOR APPROVAL PRIOR TO BEGINNING INSTALLATION.

REMOVAL, STORING, AND AMENDED SOILS FOR PLANTER AREAS:

CONTRACTOR SHALL REMOVAL ALL DEBRIS FROM PLANTER AREAS AND EXCAVATE TO A DEPTH OF 36 INCHES. SLOPE SIDES OF EXCAVATIONS AT 1:1 SLOPE OR SHORE EDGES TO PREVENT UNDERMINING OF VEHICLE LOAD AREAS AND TO PROVIDE A SLOPED PROFILE TRANSITION BETWEEN SOIL TYPES AND STRUCTURAL FILL. DISPOSE OF DEBRIS AND SUBSOIL. STOCKPILE EXCAVATED TOPSOIL IN APPROVED AREA OFF SITE.

EXISTING AND IMPORTED TOPSOIL AMENDMENTS SHALL BE DETERMINED BY THE LANDSCAPE ARCHITECT AND APPROVED BY THE CITY ARBORIST. SOIL MIXING SHALL BE DONE IN DESIGNATED AREAS OR IN THE SUPPLIERS YARD. MIX AMENDMENTS WITH TOPSOIL WHEN SOIL IS IN A FRIABLE CONDITION ONLY (DAMP AND NOT MUDDY WITH ADEQUATE MOISTURE TO BREAK INTO CLODS WHEN TURNED AND WILL NOT LEAVE A MUD STAIN ON THE HAND WHEN SQUEEZED). CONTRACTOR TO PROVIDE CERTIFICATE OF CONTENT AND PERCENT OF SOIL MIXES WITH ALL AMENDED SOIL TO THE CITY PRIOR TO INSTALLATION.

BLENDED SOIL PLACEMENT AND COMPACTION:

SOIL SHALL BE FRIABLE WHEN PLACED AND COMPACTED. PLACE SOIL IN LAYERS OF NOT MORE THAN 12" IN DEPTH. PROVIDE 3 PASSES WITH A 2" COMPACT PLATE VIBRATING COMPACTOR. COMPACT TO 80-85% MAXIMUM DRY DENSITY AS MEASURED BY THE PROCTOR TEST OR AS APPROVED FOR SPECIFIC BLENDED SOIL MIXES.

STANDARD COVERED SOIL VOLUME SPECIFICATIONS:

PART 1. COVERED SOIL MATERIALS

A. COVERED SOIL SHALL CONSIST OF THE FOLLOWING MIXTURE OF GRAVEL, SOIL AND ADMIXTURES:

I. CRUSHED ROCK, GRADATION OF 100% PASSING 1.25 INCH, MAX. 30% PASSING 0.75 INCH;
II. LOAM/ORGANIC TOPSOIL;
III. SOIL BINDER SUCH AS , STABILIZER, ; AND
IV. WATER.

PART 2. PROPORTIONS OF COVERED SOIL MATERIALS

A. THE PROPORTIONS OF COVERED SOIL MATERIALS SHALL BE AS FOLLOWS:

MATERIAL	AMOUNT FOR 1 CY OF COVERED SOIL	AMOUNT FOR 4 CY OF COVERED SOIL
CRUSHED ROCK	23.2 CUBIC FEET	4 CUBIC YARDS
TOPSOIL	5.9 CUBIC FEET	1 CUBIC YARD
SOIL BINDER	13.7 OZ	4 LBS
WATER	1.6 GALLON	46 GALLONS

B. THE TARGET MOISTURE CONTENT IS 20% BY WEIGHT OF THE TOPSOIL WEIGHT. THE ABOVE WATER CONTENTS ASSUME THE TOP IS DRY. THE AMOUNT OF WATER THAT WILL NEED TO BE ADDED WILL BE DEPENDENT ON THE MOISTURE CONTENT OF THE RAW MATERIALS. ACTUAL AMOUNTS OF WATER USED SHALL BE DETERMINED DURING MIXING.

PART 3. COVERED SOIL MIXING PROCEDURES

A. MIX COVERED SOIL IN BATCHES OF AN APPROPRIATE SIZE FOR THE EQUIPMENT BEING USED. THE END RESULT IS TO BE A MATERIAL THAT IS UNIFORMLY BLENDED TOGETHER. DO NOT BATCH IN QUANTITIES THAT WILL NOT ALLOW THE EQUIPMENT TO COMPLETELY MIX THE MATERIAL. DETERMINE BATCH SIZE AND QUANTITIES OF EACH MATERIAL NEEDED FOR THE BATCH.
B. START WITH HALF OF THE CRUSHED ROCK MATERIAL.
C. ADD ALL OF THE TOPSOIL MATERIAL.
D. ADD THE SOIL BINDER.
E. ADD HALF OF THE ESTIMATED WATER.
F. ADD THE OTHER HALF OF THE CRUSHED ROCK MATERIAL.
G. MIX THE MATERIAL TOGETHER.
H. SLOWLY ADD WATER TO THE MIXTURE AND CONTINUE TO MIX. THE FINAL AMOUNT OF WATER WILL VARY WITH MOISTURE CONTENT OF THE CRUSHED ROCK AND TOPSOIL. ADD WATER IN INCREMENTAL AMOUNTS AND MIX THE MATERIAL BETWEEN THE ADDITIONS OF WATER.
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PART 4. PLACEMENT OF COVERED SOIL

A. PROTECT SOILS AND MIXES FROM ABSORBING EXCESS WATER AND FROM EROSION AT ALL TIMES, DO NOT STORE MATERIALS UNPROTECTED FROM RAINFALL EVENTS. DO NOT ALLOW EXCESS WATER TO ENTER SITE PRIOR TO COMPACTION. IF WATER IS INTRODUCED INTO THE MATERIAL AFTER GRADING, ALLOW MATERIAL TO DRAIN OR AERATE TO OPTIMUM COMPACTION MOISTURE CONTENT.
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E. BRING COVERED SOILS TO FINISHED GRADES AS SHOWN IN THE APPROVED DRAWINGS. IMMEDIATELY PROTECT THE COVERED SOIL MATERIAL FROM CONTAMINATION BY WATER BY COVERING WIT PLASTIC OR PLYWOOD.

DATE: 07-11-2011

REVISIONS:

EXAMPLE SOIL VOLUME PLAN FOR SINGLE LOT

OFFICE LOCATED AT:
1000 1ST STREET, SUITE 1
TIGARD, OREGON 97223
PH: (503) 555-XXXX
FAX: (503) 555-XXXX
EMAIL: INFO@ABC_COLLABORATIVE.COM

LICENSED IN OR, WA, & ID

ABC COLLABORATIVE
ENGINEERING • ARCHITECTURE • PLANNING • LANDSCAPE ARCHITECTURE

DESIGNED BY:	KRJ	DRAWING NO.:	9A
DRAWN BY:	BDT	SCALE:	AS SHOWN
CHECKED BY:	KRJ		

PREPARED FOR: JOHN SMITH
PO BOX 111
TIGARD, OREGON 97223
PH: 503-909-5555
FAX: 503-909-5556

EVERGREEN HEIGHTS PARTITION
190 SW 147TH ST.

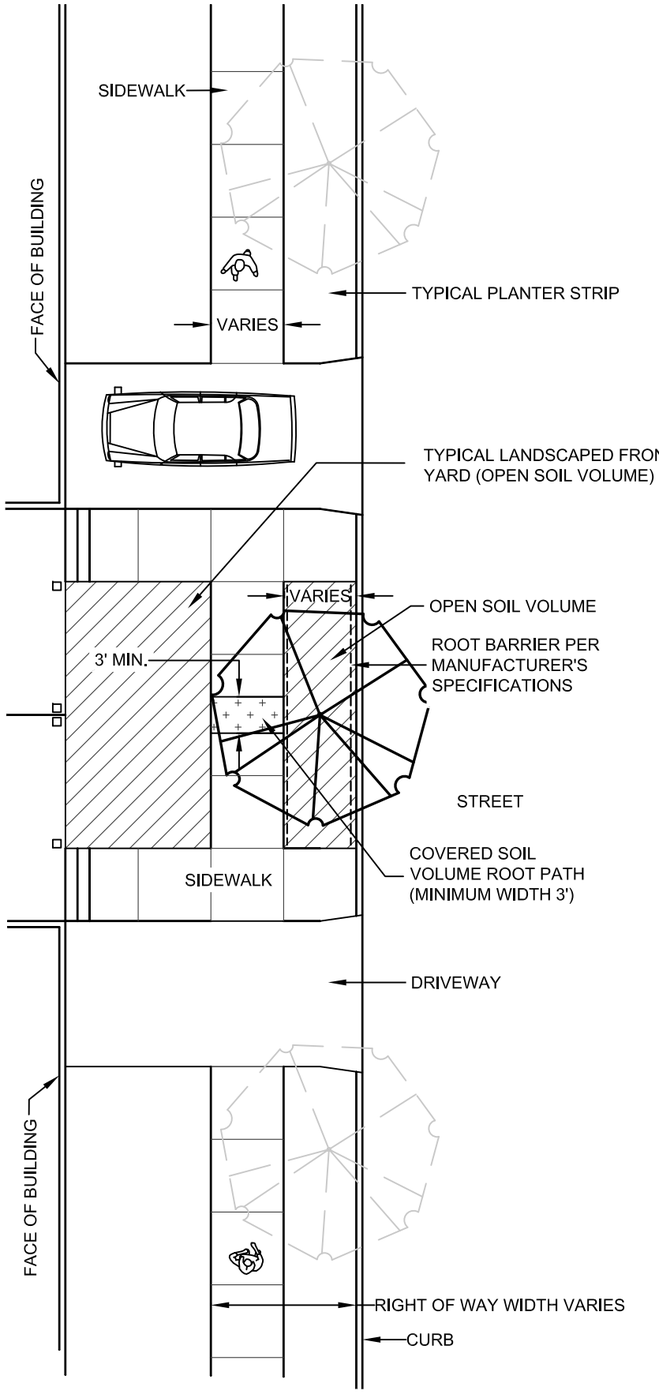
TIGARD
TAXLOT 1700

OREGON
TAXMAP 2 4E 25

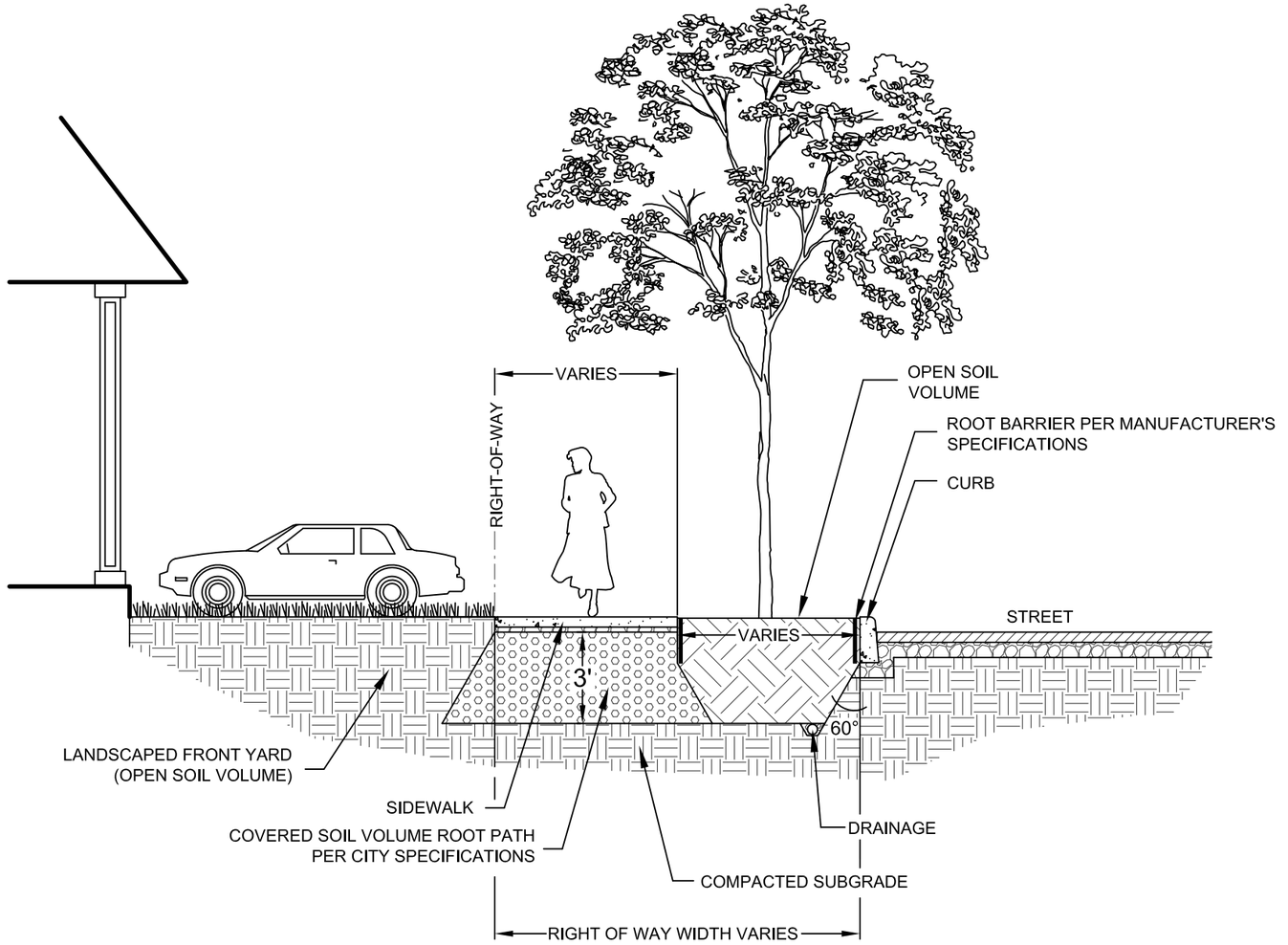
REGISTERED LANDSCAPE ARCHITECT
xx
JOHN H. DOE
OREGON

JOB NUMBER 2001

SHEET APPENDIX 13



PLAN



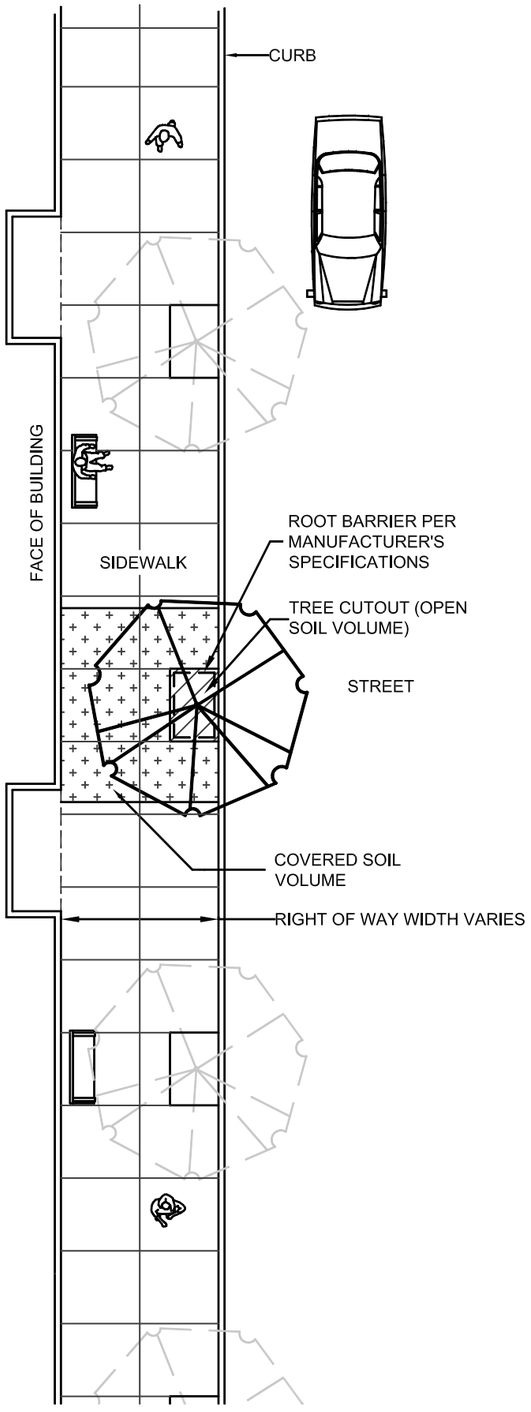
PROFILE

EXAMPLE COVERED SOIL VOLUME PLAN DRAWING – ROOT PATH OPTION FOR STREET TREE

NO SCALE

DWG. NO.

APPENDIX 14



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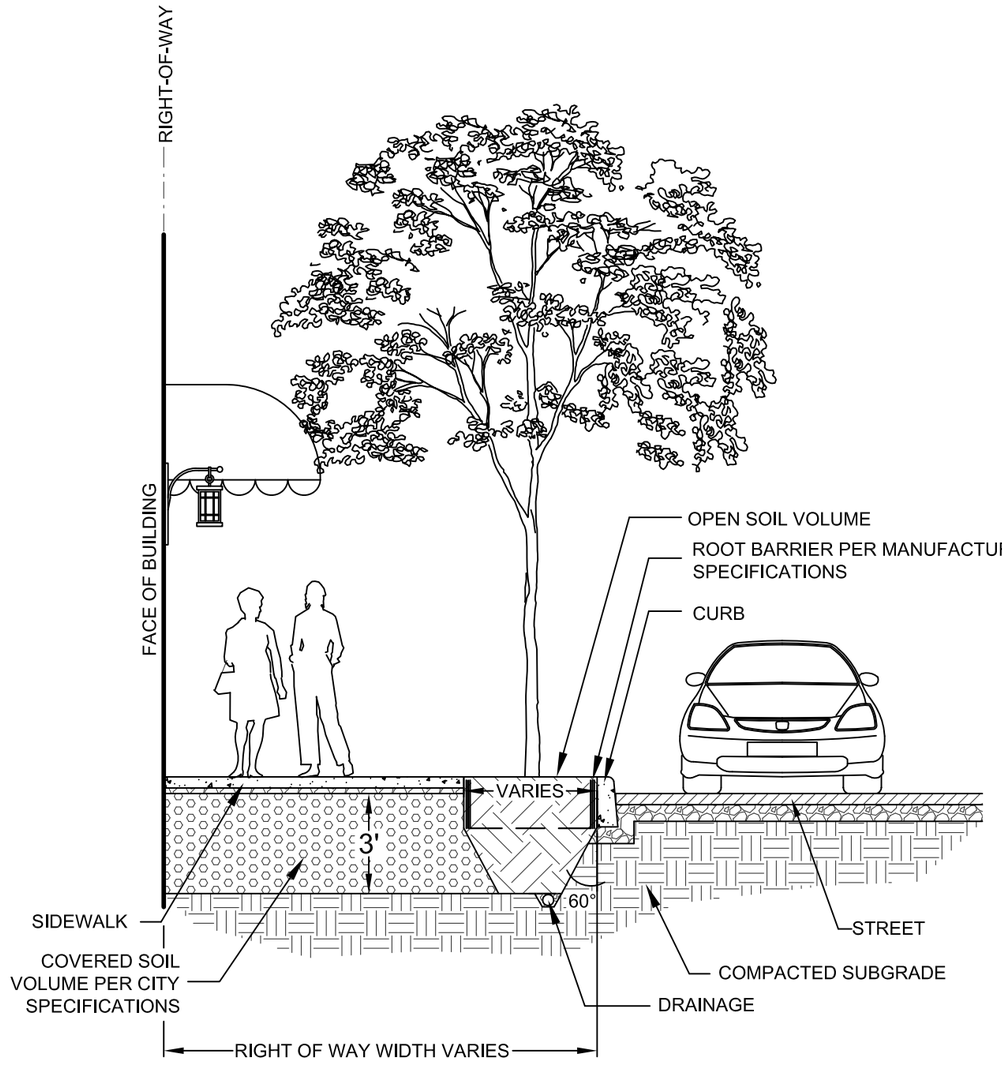
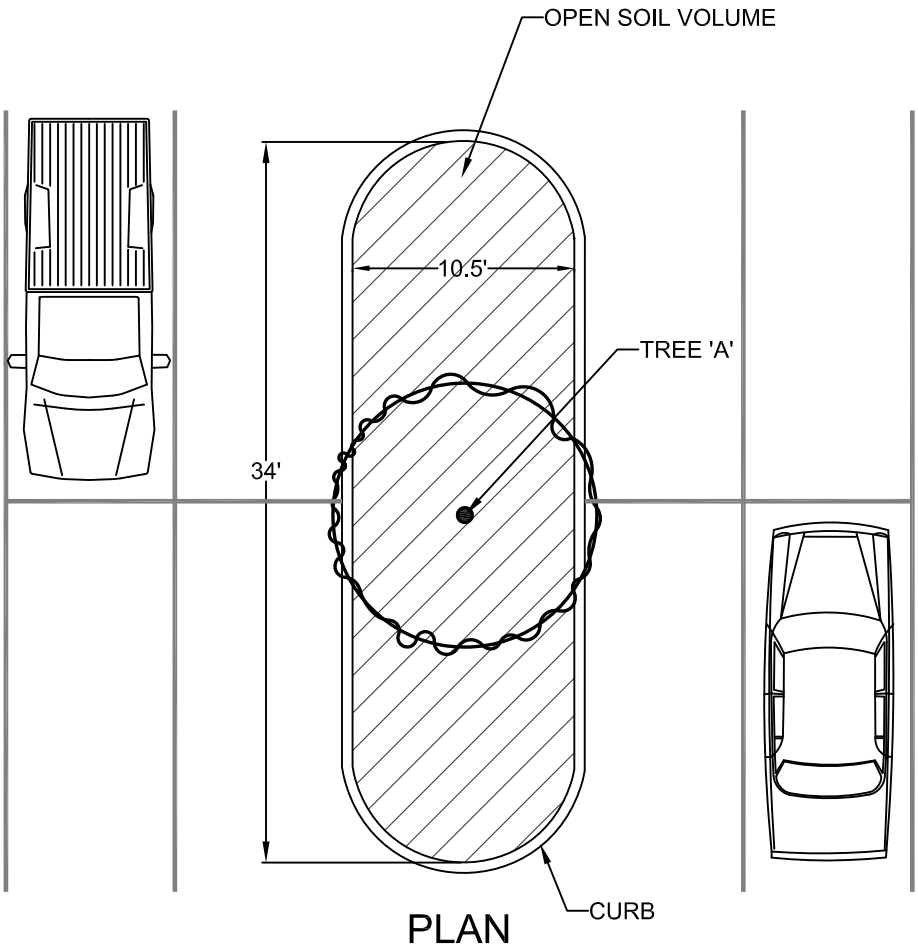


PROFILE

EXAMPLE COVERED SOIL VOLUME PLAN DRAWING – UNDER SIDEWALK OPTION FOR STREET TREE

NO SCALE

DWG. NO.
APPENDIX 14



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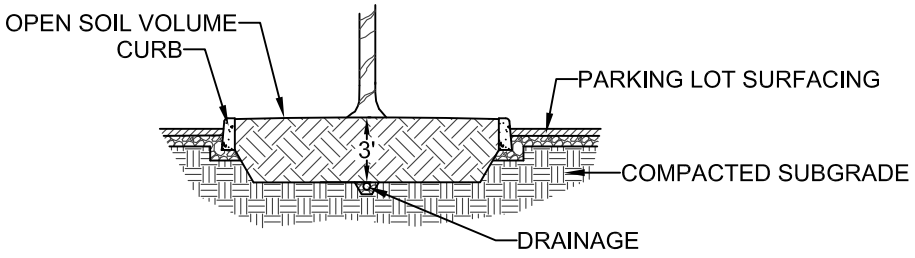


PROFILE

TOTAL SOIL VOLUME CALCULATION FOR TREE 'A':

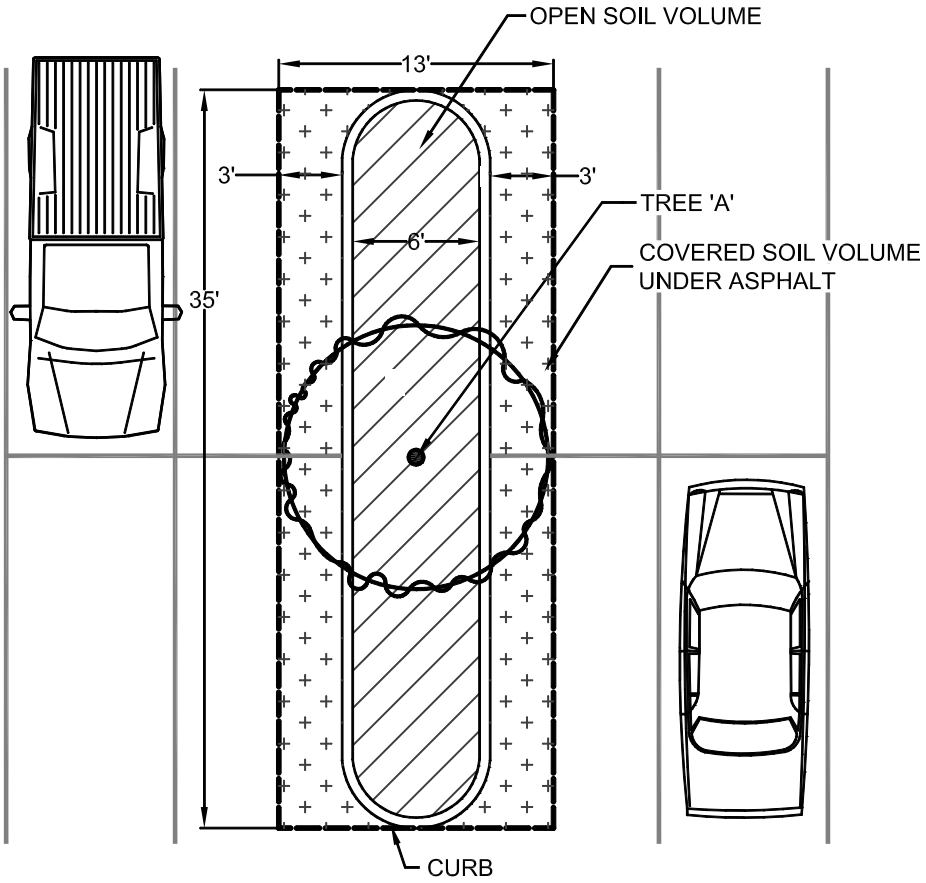
OPEN SOIL VOLUME = (ISLAND AREA) X (SOIL DEPTH) = 336 S.F. x 3' = 1,008 C.F.

COVERED SOIL VOLUME = 0 C.F.

TOTAL SOIL VOLUME = OPEN SOIL VOLUME + COVERED SOIL VOLUME = 1,008 C.F. + 0 C.F. = 1,008 C.F.

1,008 C.F. IS GREATER THAN THE SOIL VOLUME REQUIRED FOR A PARKING LOT TREE (1,000 C.F.) SO THIS MEETS THE CITY REQUIREMENTS.

EXAMPLE SOIL VOLUME CALCULATION – PARKING LOT TREE WITH OPEN SOIL	NO SCALE
	DWG. NO. APPENDIX 15



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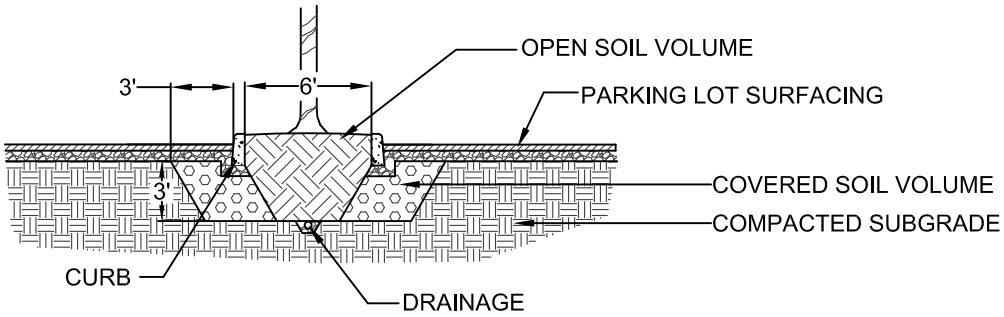


PROFILE

TOTAL SOIL VOLUME CALCULATION FOR TREE 'A':

OPEN SOIL VOLUME = (PLANTER AREA) X (SOIL DEPTH) = 196 S.F. x 3' = 588 C.F.

COVERED SOIL VOLUME = 259 S.F. X 3' = 777 C.F.

TOTAL SOIL VOLUME = OPEN SOIL VOLUME + COVERED SOIL VOLUME = 588 C.F. + 777 C.F. = 1,365 C.F.

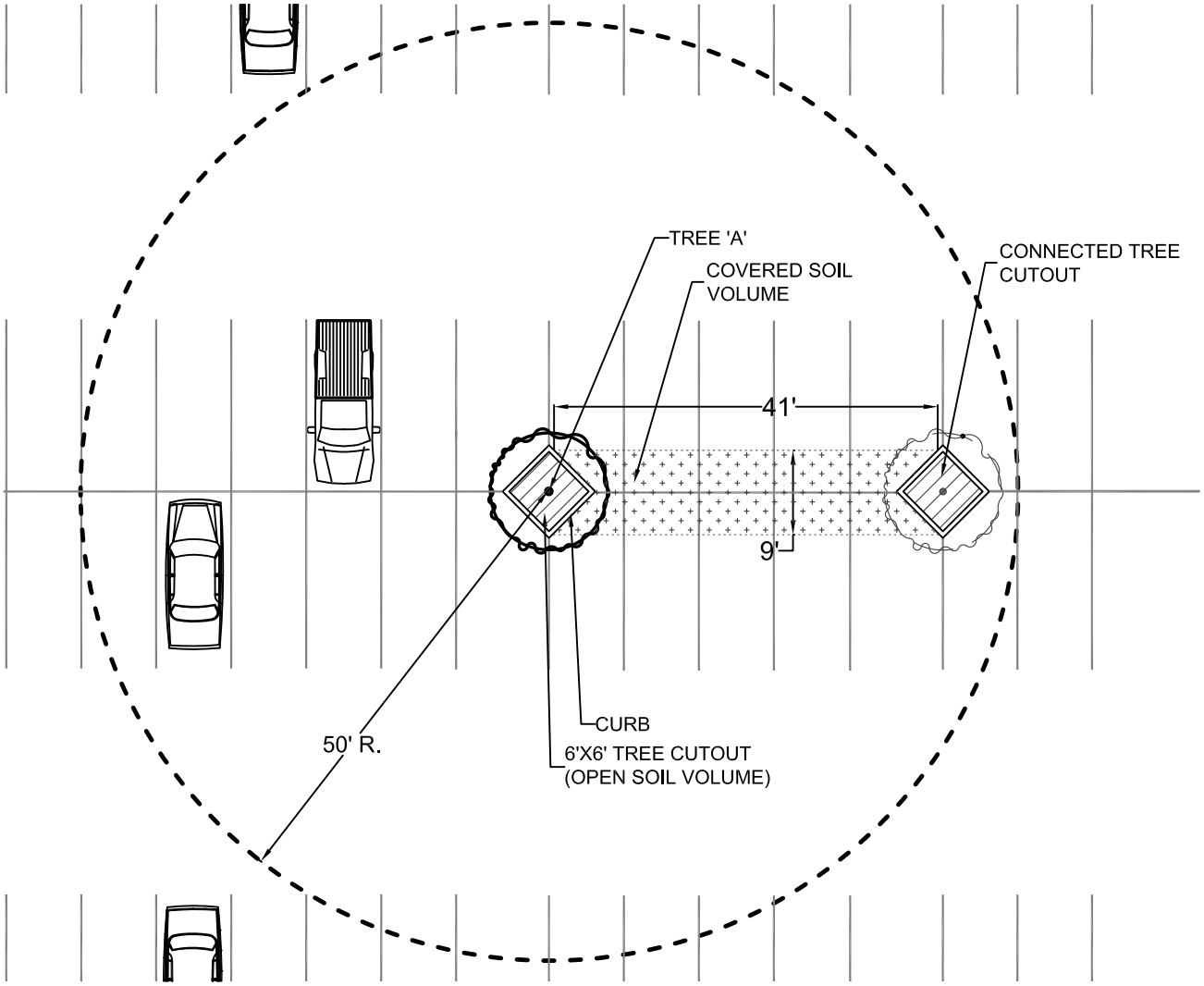
1,365 C.F. IS GREATER THAN THE SOIL VOLUME REQUIRED FOR A PARKING LOT TREE (1,000 C.F.) SO THIS MEETS THE CITY REQUIREMENTS.

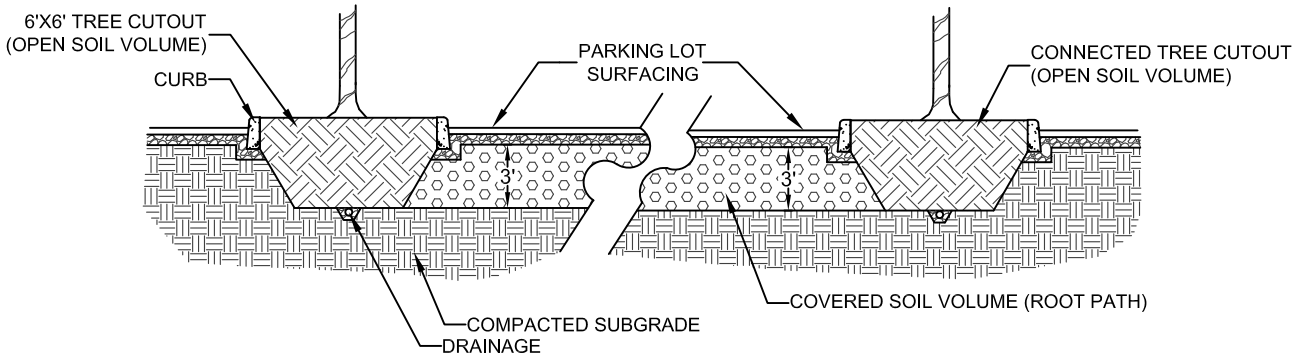
EXAMPLE SOIL VOLUME CALCULATION – PARKING LOT TREE WITH COVERED SOIL	NO SCALE
	DWG. NO. APPENDIX 15

TOTAL SOIL VOLUME CALCULATION FOR TREE 'A':

OPEN SOIL VOLUME = 36 S.F. (TREE CUTOUT AREA)+ 36 S.F (CONNECTED TREE CUTOUT AREA) x 3' (SOIL DEPTH) = 216 C.F.
COVERED SOIL VOLUME = 330 S.F. (COVERED SOIL AREA) X 3' (COVERED SOIL DEPTH' =990 C.F
TOTAL SOIL VOLUME = OPEN SOIL VOLUME + COVERED SOIL VOLUME = 216 C.F. + 990 C.F.=1,206 C.F.

1,206 C.F. IS GREATER THAN THE SOIL VOLUME REQUIRED FOR A PARKING LOT TREE (1000 C.F) SO THIS MEETS THE CITY REQUIREMENTS.





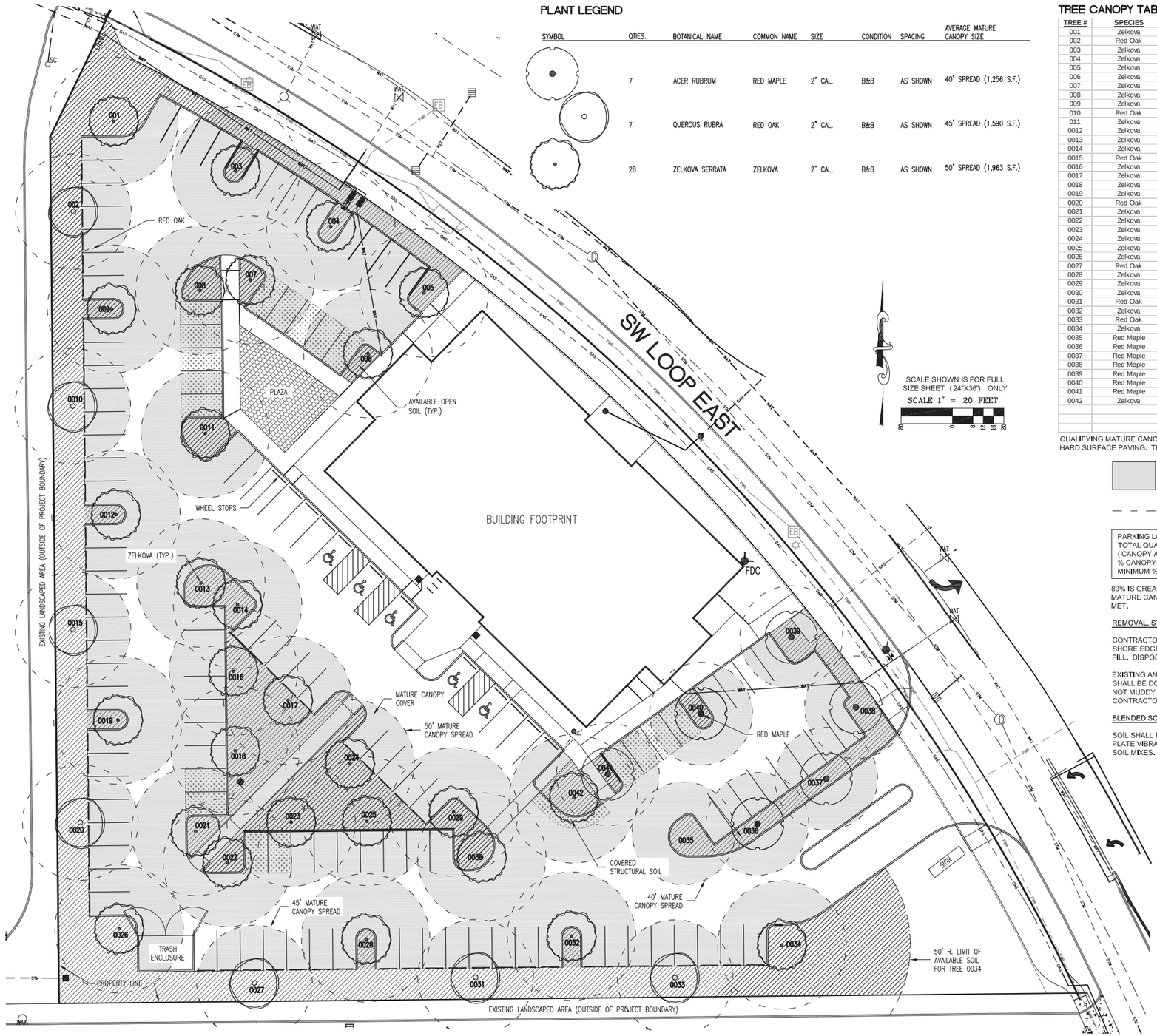
EXAMPLE SOIL VOLUME CALCULATION – PARKING LOT TREE WITH ROOT PATH

NO SCALE

DWG. NO.
APPENDIX 15

PLANT LEGEND

SYMBOL	QTIES.	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING	AVERAGE MATURE CANOPY SIZE
	7	ACER RUBRUM	RED MAPLE	2" CAL.	B&B	AS SHOWN	40' SPREAD (1,256 S.F.)
	7	QUERCUS RUBRA	RED OAK	2" CAL.	B&B	AS SHOWN	45' SPREAD (1,590 S.F.)
	28	ZELKOVA SERRATA	ZELKOVA	2" CAL.	B&B	AS SHOWN	50' SPREAD (1,963 S.F.)



TREE CANOPY TABLE

TREE #	SPECIES	OPEN SOIL VOLUME	COVERED SOIL VOLUME	TOTAL SOIL VOLUME	AVE. MATURE CANOPY	%OF CANOPY OVER PARKING LOT	AREA OVER PARKING LOT
001	Zelkova	5,466 c.f.	0 c.f.	5,466 c.f.	50' spread (1,963 s.f.)	39%	757 s.f.
002	Red Oak	4,539 c.f.	0 c.f.	4,539 c.f.	45' spread (1,590 s.f.)	40%	640 s.f.
003	Zelkova	3,192 c.f.	0 c.f.	3,192 c.f.	50' spread (1,963 s.f.)	92%	1,812 s.f.
004	Zelkova	3,069 c.f.	0 c.f.	3,069 c.f.	50' spread (1,963 s.f.)	89%	1,749 s.f.
005	Zelkova	1,818 c.f.	0 c.f.	1,818 c.f.	50' spread (1,963 s.f.)	53%	1,040 s.f.
006	Zelkova	303 c.f.	2,160 c.f.	2,463 c.f.	50' spread (1,963 s.f.)	50%	984 s.f.
007	Zelkova	348 c.f.	2,160 c.f.	2,508 c.f.	50' spread (1,963 s.f.)	80%	1,575 s.f.
008	Zelkova	576 c.f.	2,166 c.f.	2,742 c.f.	50' spread (1,963 s.f.)	85%	1,668 s.f.
009	Zelkova	3,681 c.f.	0 c.f.	3,681 c.f.	50' spread (1,963 s.f.)	76%	1,498 s.f.
010	Red Oak	4,200 c.f.	0 c.f.	4,200 c.f.	45' spread (1,590 s.f.)	35%	559 s.f.
011	Zelkova	708 c.f.	2,076 c.f.	2,784 c.f.	50' spread (1,963 s.f.)	82%	1,613 s.f.
0012	Zelkova	3,651 c.f.	0 c.f.	3,651 c.f.	50' spread (1,963 s.f.)	79%	1,550 s.f.
0013	Zelkova	1,101 c.f.	0 c.f.	1,101 c.f.	50' spread (1,963 s.f.)	100%	1,963 s.f.
0014	Zelkova	1,101 c.f.	0 c.f.	1,101 c.f.	50' spread (1,963 s.f.)	100%	1,963 s.f.
0015	Red Oak	4,155 c.f.	0 c.f.	4,155 c.f.	45' spread (1,590 s.f.)	36%	566 s.f.
0016	Zelkova	4,176 c.f.	0 c.f.	4,176 c.f.	50' spread (1,963 s.f.)	100%	1,963 s.f.
0017	Zelkova	4,233 c.f.	0 c.f.	4,233 c.f.	50' spread (1,963 s.f.)	100%	1,963 s.f.
0018	Zelkova	4,233 c.f.	0 c.f.	4,233 c.f.	50' spread (1,963 s.f.)	100%	1,963 s.f.
0019	Zelkova	3,630 c.f.	0 c.f.	3,630 c.f.	50' spread (1,963 s.f.)	79%	1,547 s.f.
0020	Red Oak	4,506 c.f.	0 c.f.	4,506 c.f.	45' spread (1,590 s.f.)	41%	644 s.f.
0021	Zelkova	417 c.f.	870 c.f.	1,287 c.f.	50' spread (1,963 s.f.)	100%	1,963 s.f.
0022	Zelkova	444 c.f.	870 c.f.	1,314 c.f.	50' spread (1,963 s.f.)	100%	1,963 s.f.
0023	Zelkova	4,293 c.f.	870 c.f.	5,163 c.f.	50' spread (1,963 s.f.)	100%	1,963 s.f.
0024	Zelkova	4,284 c.f.	870 c.f.	5,154 c.f.	50' spread (1,963 s.f.)	100%	1,963 s.f.
0025	Zelkova	4,284 c.f.	870 c.f.	5,154 c.f.	50' spread (1,963 s.f.)	100%	1,963 s.f.
0026	Zelkova	5,946 c.f.	0 c.f.	5,946 c.f.	50' spread (1,963 s.f.)	48%	936 s.f.
0027	Red Oak	3,702 c.f.	0 c.f.	3,702 c.f.	45' spread (1,590 s.f.)	37%	581 s.f.
0028	Zelkova	2,430 c.f.	0 c.f.	2,430 c.f.	50' spread (1,963 s.f.)	79%	1,558 s.f.
0029	Zelkova	1,077 c.f.	0 c.f.	1,077 c.f.	50' spread (1,963 s.f.)	100%	1,963 s.f.
0030	Zelkova	1,077 c.f.	0 c.f.	1,077 c.f.	50' spread (1,963 s.f.)	100%	1,963 s.f.
0031	Red Oak	4,191 c.f.	0 c.f.	4,191 c.f.	45' spread (1,590 s.f.)	40%	642 s.f.
0032	Zelkova	3,630 c.f.	0 c.f.	3,630 c.f.	50' spread (1,963 s.f.)	80%	1,563 s.f.
0033	Red Oak	4,392 c.f	0 c.f.	4,392 c.f	45' spread (1,590 s.f.)	38%	602 s.f.
0034	Zelkova	7,350 c.f	0 c.f.	7,350 c.f	50' spread (1,963 s.f.)	45%	882 s.f.
0035	Red Maple	1,416 c.f	0 c.f.	1,416 c.f	40' spread (1,256 s.f.)	100%	1,256 s.f.
0036	Red Maple	1,989 c.f	0 c.f.	1,989 c.f	40' spread (1,256 s.f.)	100%	1,256 s.f.
0037	Red Maple	2,562 c.f	0 c.f.	2,562 c.f	40' spread (1,256 s.f.)	100%	1,256 s.f.
0038	Red Maple	2,529 c.f.	0 c.f.	2,529 c.f.	40' spread (1,256 s.f.)	73%	915 s.f.
0039	Red Maple	1,533 c.f	0 c.f.	1,533 c.f	40' spread (1,256 s.f.)	58%	726 s.f.
0040	Red Maple	516 c.f.	1,716 c.f.	2,232 c.f.	40' spread (1,256 s.f.)	81%	1,021 s.f.
0041	Red Maple	516 c.f.	1,716 c.f.	2,232 c.f.	40' spread (1,256 s.f.)	80%	1,007 s.f.
0042	Zelkova	837 c.f.	441 c.f.	1,278 c.f.	50' spread (1,963 s.f.)	92%	1,804 s.f.
						Total Qualifying Mature Tree Canopy Area:	57,763 s.f.
						(Sum of canopy area over parking lot)	

QUALIFYING MATURE CANOPY INCLUDES ALL AREAS DIRECTLY OVER THE PARKING LOT SURFACE AND AREAS THAT ARE SURROUNDED ON AT LEAST THREE SIDES BY EITHER CURB OR HARD SURFACE PAVING. THIS INCLUDES BUT IS NOT LIMITED TO PARKING LOT ISLANDS AND PLANTING AREAS BETWEEN THE PARKING LOT AND SIDEWALK.

QUALIFYING MATURE CANOPY COVER

INDIVIDUAL TREE MATURE CANOPY OUTLINE

OPEN SOIL VOLUME

COVERED SOIL VOLUME

PARKING LOT AREA:	64,962 S.F.
TOTAL QUALIFYING MATURE TREE CANOPY AREA*: (CANOPY AREA DIRECTLY OVER PARKING LOT)	57,763 S.F.
% CANOPY COVER:	89%
MINIMUM % CANOPY COVER:	30%

89% IS GREATER THAN THE MINIMUM OF 30% TOTAL QUALIFYING MATURE CANOPY COVER THEREFORE CITY REQUIREMENTS ARE MET.

PARKING LOT TREE SOIL VOLUME REQUIREMENTS

MIN. SOIL VOLUME REQUIREMENT (C.F. PER TREE)
1,000 C.F.

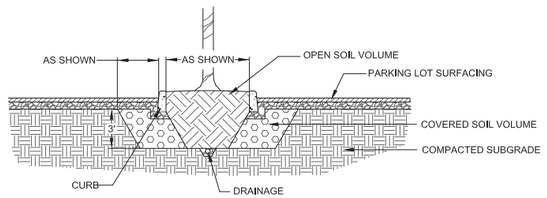
REMOVAL, STORING, AND AMENDED SOILS FOR PLANTER AREAS:

CONTRACTOR SHALL REMOVAL ALL DEBRIS FROM PLANTER AREAS AND EXCAVATE TO A DEPTH OF 36 INCHES. SLOPE SIDES OF EXCAVATIONS AT 1:1 SLOPE OR SHORE EDGES TO PREVENT UNDERMINING OF VEHICLE LOAD AREAS AND TO PROVIDE A SLOPED PROFILE TRANSITION BETWEEN SOIL TYPES AND STRUCTURAL FILL. DISPOSE OF DEBRIS AND SUBSOIL. STOCKPILE EXCAVATED TOPSOIL IN APPROVED AREA OFF SITE.

EXISTING AND IMPORTED TOPSOIL AMENDMENTS SHALL BE DETERMINED BY THE LANDSCAPE ARCHITECT AND APPROVED BY THE CITY ARBORIST. SOIL MIXING SHALL BE DONE IN DESIGNATED AREAS OR IN THE SUPPLIERS YARD. MIX AMENDMENTS WITH TOPSOIL WHEN SOIL IS IN A FRIABLE CONDITION ONLY (DAMP AND NOT MUDDY WITH ADEQUATE MOISTURE TO BREAK INTO CLODS WHEN TURNED AND WILL NOT LEAVE A MUD STAIN ON THE HAND WHEN SQUEEZED) . CONTRACTOR TO PROVIDE CERTIFICATE OF CONTENT AND PERCENT OF SOIL MIXES WITH ALL AMENDED SOIL TO THE CITY PRIOR TO INSTALLATION.

BLENDED SOIL PLACEMENT AND COMPACTION:

SOIL SHALL BE FRIABLE WHEN PLACED AND COMPACTED. PLACE SOIL IN LAYERS OF NOT MORE THAN 12" IN DEPTH, PROVIDE 3 PASSES WITH A 2" COMPACT PLATE VIBRATING COMPACTOR. COMPACT TO 80-85% MAXIMUM DRY DENSITY AS MEASURED BY THE PROCTOR TEST OR AS APPROVED FOR SPECIFIC BLENDED SOIL MIXES.



1 PARKING TREE WITH COVERED SOIL DETAIL
NOT TO SCALE

DATE: 07-11-2011

REVISIONS:

EXAMPLE PARKING LOT TREE CANOPY PLAN

OFFICE LOCATED AT:
1000 1ST STREET, SUITE 1
TIGARD, OREGON 97223
PH: (503) 555-XXXX
FAX: (503) 555-XXXX
EMAIL: INFO@ABC_COLLABORATIVE.COM

LICENSED IN OR, WA, & ID

ABC COLLABORATIVE
ENGINEERING • ARCHITECTURE • PLANNING • LANDSCAPE ARCHITECTURE

DESIGNED BY:	DRAWING NO.:
DRAWN BY:	SCALE: AS NOTED
CHECKED BY:	

PREPARED FOR: HANCOCK ASSOCIATES
1500 SW LOOP ROAD
TIGARD, OR 97223

LOOP ROAD IMPROVEMENTS
1011 SW LOOP ROAD

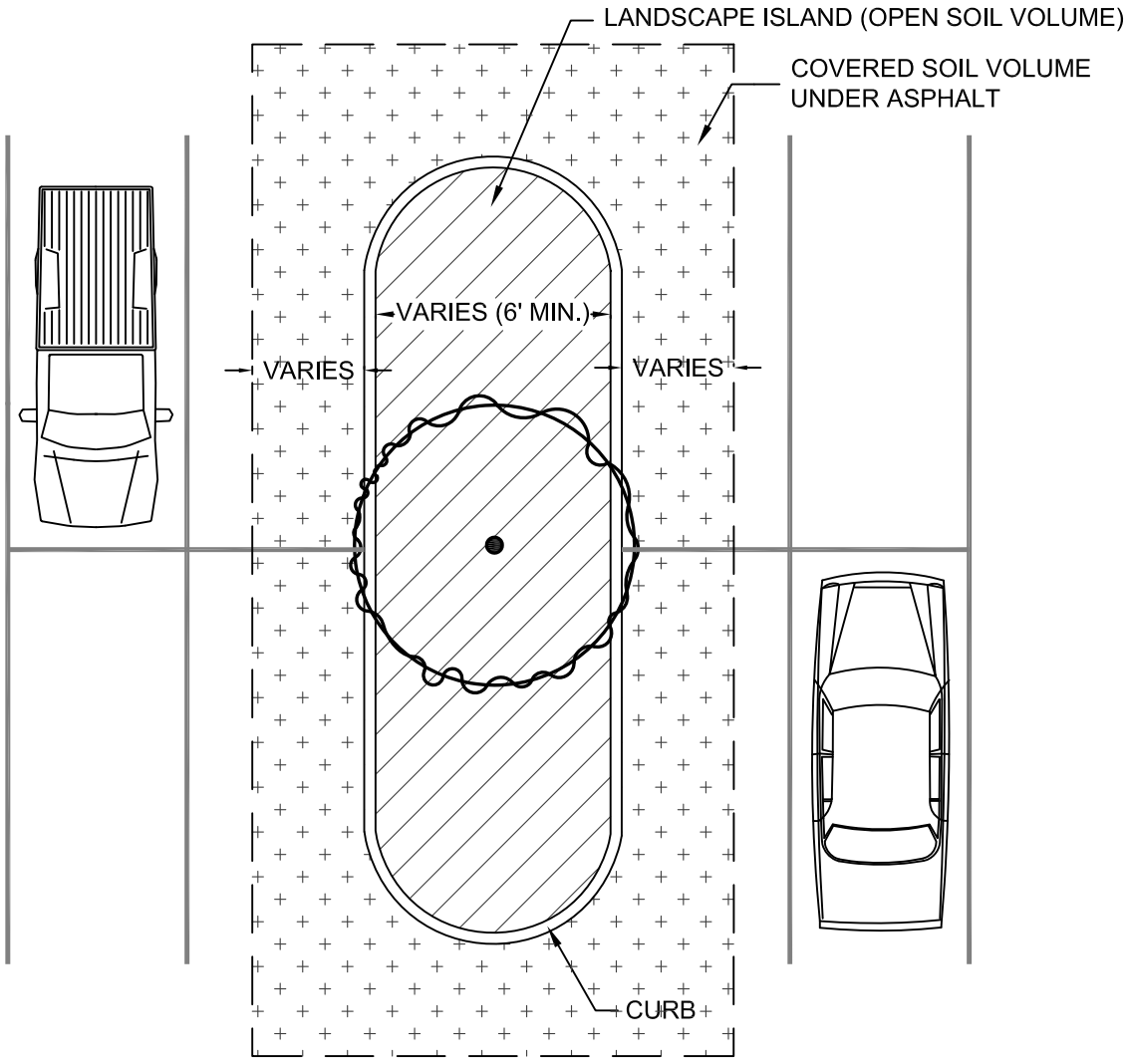
TIGARD
TAX LOT 1000

OREGON
TAX MAP 25 1 09AB

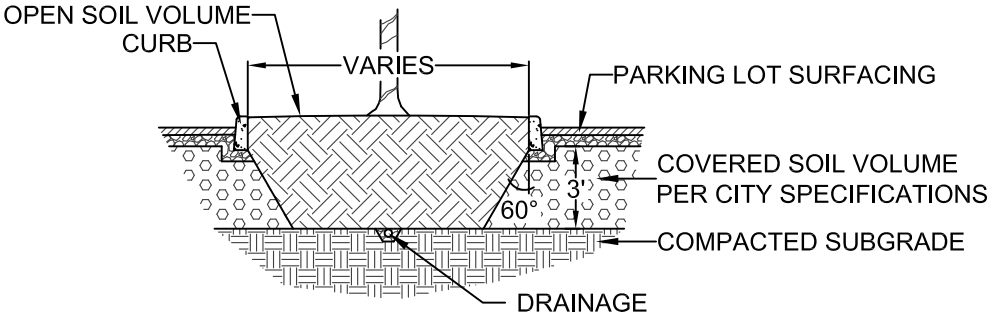
REGISTERED LANDSCAPE ARCHITECT
xx
JOHN H. DOE
OREGON

JOB NUMBER 1000

SHEET APPENDIX 16

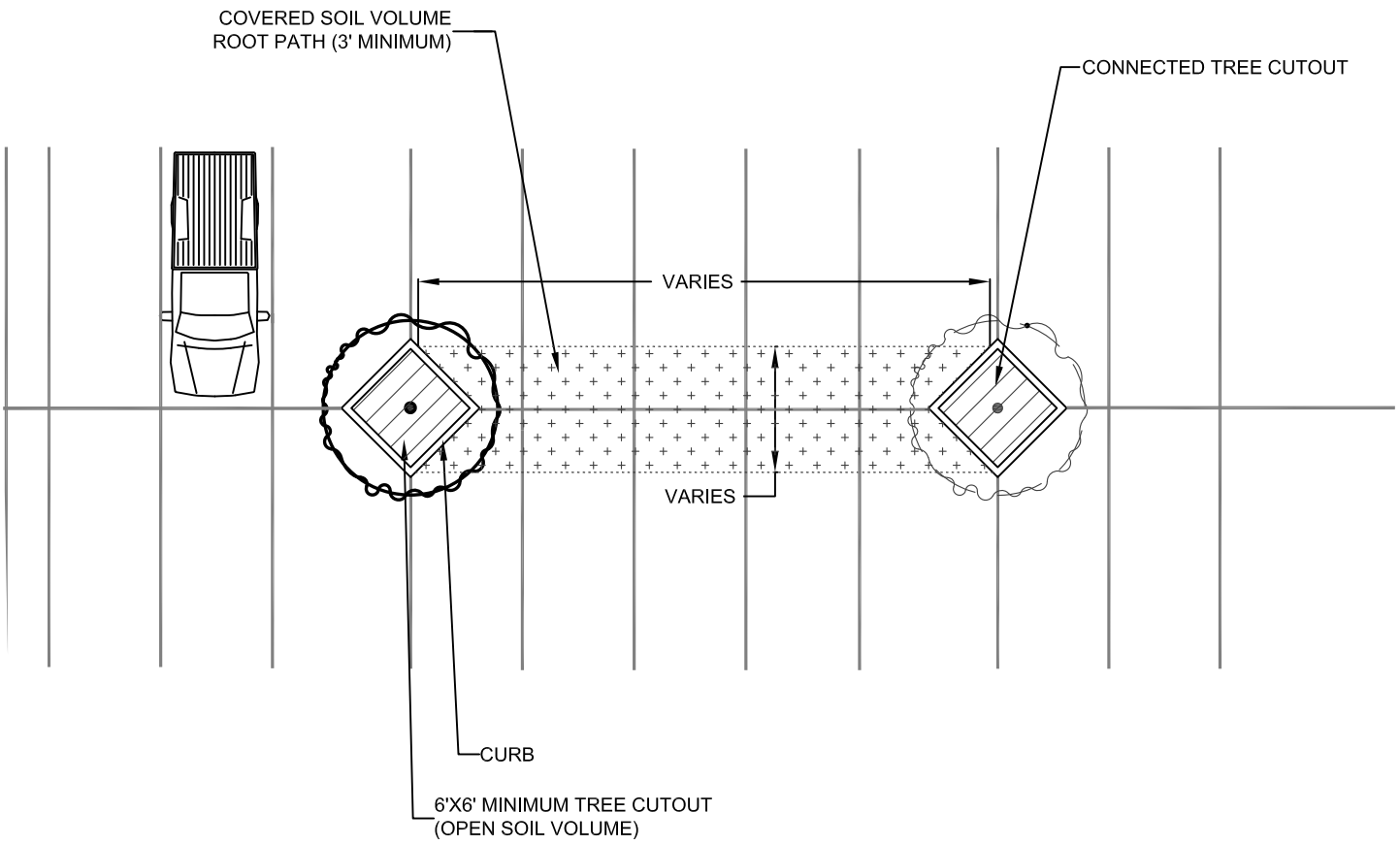


PLAN

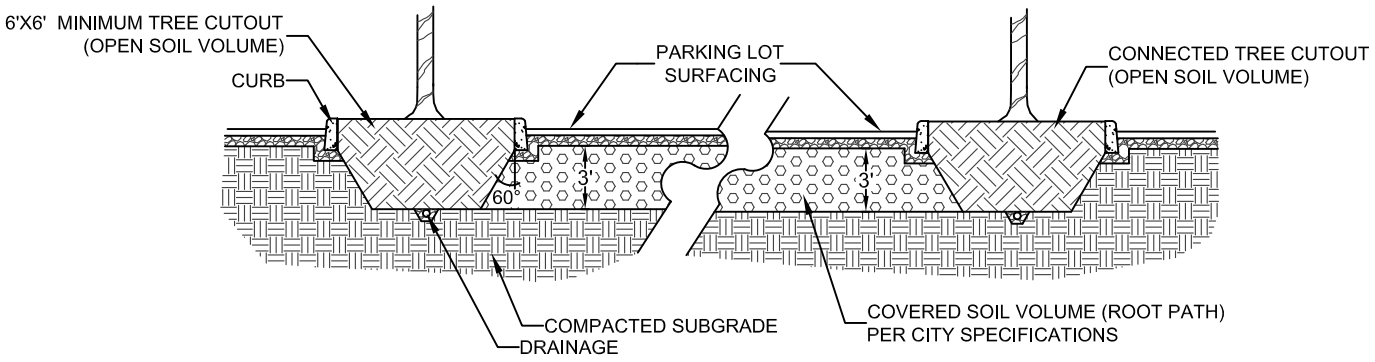


PROFILE

EXAMPLE COVERED SOIL VOLUME PLAN DRAWING – UNDER PARKING LOT OPTION FOR PARKING LOT TREE	NO SCALE
	DWG. NO. APPENDIX 17 PLAN

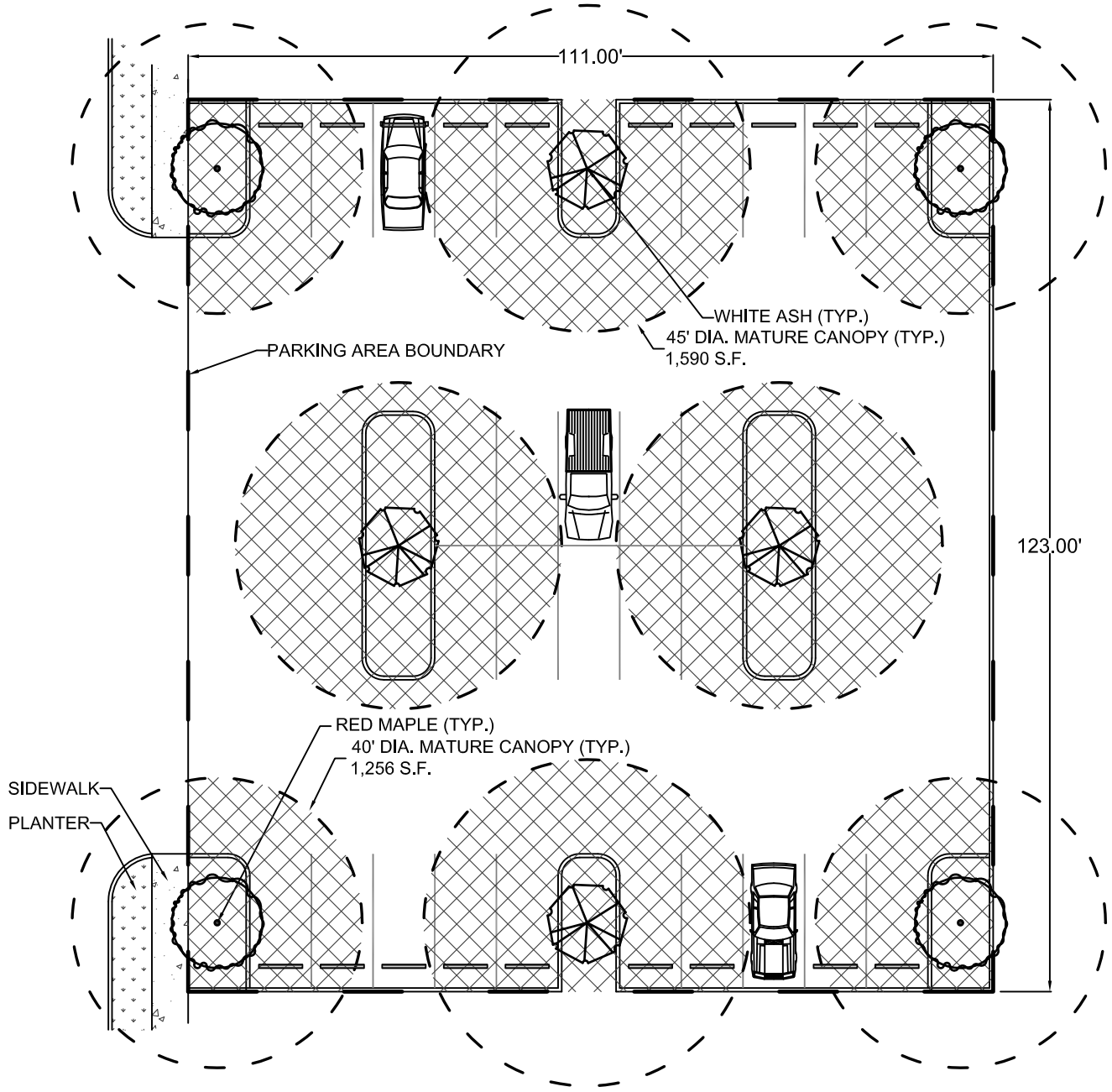


PLAN



PROFILE

EXAMPLE COVERED SOIL VOLUME DRAWING– ROOT PATH OPTION FOR PARKING LOT TREE	NO SCALE
	DWG. NO. APPENDIX 17



TOTAL CANOPY AREA OF PARKING LOT TREES* = 11,388 S.F.

TOTAL QUALIFYING MATURE CANOPY COVER = CANOPY COVER DIRECTLY OVER THE PARKING AREA IN SQUARE FEET, INCLUDING PLANTING ISLANDS AND AREAS SURROUNDED BY CURB OR HARD SURFACE PAVING ON AT LEAST THREE SIDES.

TOTAL QUALIFYING MATURE CANOPY COVER = 8,057 S.F.

PARKING LOT AREA = 13,590 S.F.

PERCENT ACTUAL CANOPY COVER = (8,057 S.F.) / (13,590 S.F.)= 59%

59% IS GREATER THAN THE MINIMUM OF 30% TOTAL QUALIFYING MATURE CANOPY COVER THEREFORE CITY REQUIREMENTS ARE MET.

*CANOPY AREA PER TREE IS DETERMINED FROM THE VALUE GIVEN IN THE CITY OF TIGARD PARKING LOT TREE LIST FOR A MATURE TREE OF THAT SPECIES.

EXAMPLE PARKING LOT THAT MEETS 30% MINIMUM CANOPY COVER REQUIREMENT

NO SCALE

DWG. NO.

APPENDIX 18