

## CHAPTER 4 GENERAL LANDSCAPING STANDARDS

This chapter describes plant material minimum standards that apply to landscaping both on private property (on-site) and within the public right-of-way (off-site). The following standards shall apply to all vegetation used to satisfy landscaping requirements.

### 4.1 ALL PLANT STOCK

Plants shall meet the standards of the most current edition of American Standard for Nursery Stock (ANSI Z60.1) and as further specified in this Manual. Where ANZI 60.1 Standards and this Manual conflict, this Manual shall apply. Plant material should be obtained from established commercial licensed nursery growers and installed by qualified landscape professionals.

All plant material shall be:

- balled and burlapped (B&B), containerized, bare root and/or grown in root control bags;
- well watered prior to shipping and checked for adequate moisture at arrival;
- maintained under shade and irrigated regularly if not planted within 24 hours of delivery. B&B or bare-root plant material must be healed-in while being stored prior to planting;
- planted immediately once removed from the packaging, such as the container, burlap or root control bag; and,
- protected from extreme temperatures, wind and theft, during transport and storage on-site.

It is intended that all plants installed in the required landscaped areas will reach their full mature size. Pruning that adversely affects the healthy living condition of the plant, significantly damages the natural growing form of the plant, eliminates or significantly reduces the plant function (i.e. canopy, stormwater absorption/benefit) will be considered removal, and is subject to provisions in TMC 13.06.090B and 13.05.150 enforcement including, but not limited to, fines and required plant replacement.

### 4.2 TREES

In accordance with City of Tacoma policies to establish a healthy and diverse urban forest, as defined in the Urban Forest Policy Element adopted in 2010 as part of the City's Comprehensive Plan, the following standards apply to all trees required by TMC 13.06.090B .

#### 4.2.1 Tree Selection and Species Diversity

Diversification lessens the impact and likelihood of disease and pest infestation, and provides diverse habitat to better meet the needs of wildlife within a healthy urban forest. To ensure tree species diversity, the following standards shall apply.

For projects involving the planting of:

- 4 to 10 trees, a minimum of 2 different genera shall be used.
- 10 to 25 trees, a minimum of 3 different genera and a mixture of tree types (evergreen and deciduous) shall be used.

- greater than 25 trees, one genera shall not exceed 25 percent and a minimum of 20 percent of the total number of trees shall be evergreen.

Fruit producing (edible) trees may be planted to satisfy tree planting requirements on-site, including in on-site parking areas/lots. Fruit trees are not permitted in the public right-of-way (ROW). Be advised that some fruit tree pruning practices might be considered “excessive pruning” under TMC 13.06.090B and as such, pruning that adversely affects the healthy living condition of the plant, significantly damages the natural growing form of the plant, eliminates or significantly reduces the plant function (i.e. canopy, stormwater absorption/benefit) will be considered removal, and is subject to provisions in TMC 13.06.090B and 13.05.150 enforcement including, but not limited to, fines and required plant replacement.

#### 4.2.2 Tree Stock

At the time of planting all trees shall:

- Have natural shape (no sheared or semi-sheared trees);
- Have a single, strong, central leader;
- Have branches evenly spaced around the central leader, except for trees with ascending branches (ex. *Ulmus americana* and *Zelkova serrata*); and,
- For trees that have been pruned - show only proper pruning cuts (not flush cuts), pruned to the outside of the branch collar, for trees that have been pruned.

Deciduous Trees shall meet the following requirements:

- At least 50% of the deciduous trees provided shall be a minimum of 2-inch caliper at the time of planting. The remaining deciduous trees shall be a minimum of 1½-inch caliper at the time of planting.
- Street trees with ascending branches (ex. *Ulmus americana* and *Zelkova serrata*) shall have a trunk free of branches to a minimum of five feet, measured from the ground elevation.
- All other deciduous street trees shall have a trunk free of branches to a minimum of six feet in height, measured from the ground elevation.

Evergreen Trees shall meet the following requirements:

- At least 50% of the evergreen trees provided shall be a minimum of six feet tall and shall have a trunk free of branches up to two feet in height, measured from finish grade. The remaining evergreen trees shall be a minimum of five feet tall at the time of planting.
- All evergreen trees shall be species with the ability to develop a minimum branching width of eight feet within five years.

#### 4.2.3 Street Trees

In addition to the tree requirements outlined in TMC 13.06.090B, street trees are required when:

- street or sidewalk improvements are required in association with Preliminary Plats or Short Plats with 5 or more lots;
- constructing new Permanent Roadways (see glossary for definition), excluding residential Local Improvement Districts;
- altering the width of existing Permanent Roadways;
- constructing a new sidewalk along more than 50% of a sites frontage (when 50 linear feet or more is being constructed). In the case of new constructed sidewalk, street trees shall be required proportionate to the linear footage of sidewalks constructed.; or,
- replacing more than 50% of an existing sidewalk along a site's frontage (when 50 linear feet or more is being replaced). In the case of sidewalk replacement, street trees shall be required proportionate to the linear footage of sidewalks replaced.

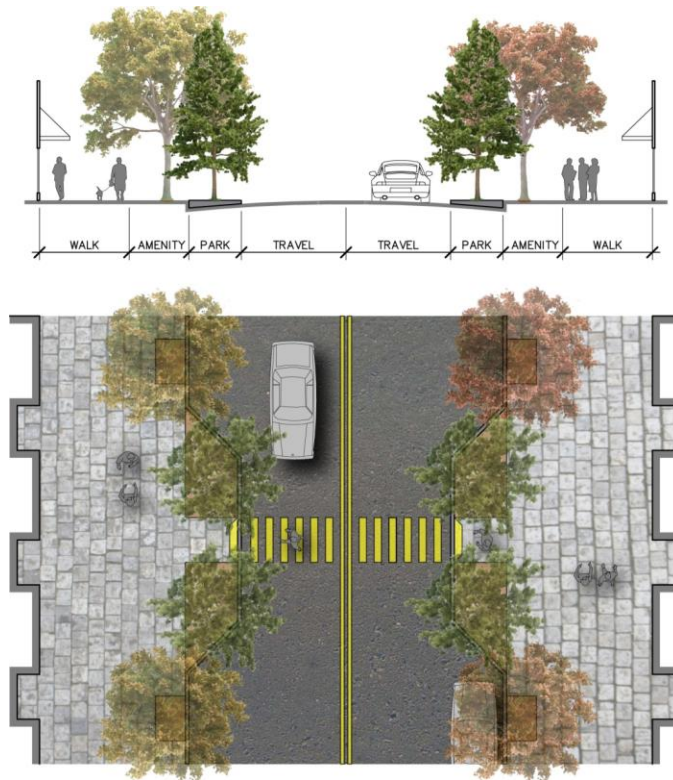
#### 4.2.4 Tree Placement in the Right-of-Way

While the preferred placement of street trees is in the amenity zone (between the back of curb and the pedestrian walkway), often there are other suitable locations to place street trees. Medians, bulb-outs and converted parking spaces offer additional opportunities for street tree placement. If placement of street trees in the amenity zone is not desired due to potential conflicts with signage, buildings or other infrastructure, alternative placement locations such as those described above may be accepted provided that a minimum of 5'-0" free and clear walkway is maintained. In the case of narrow or vaulted walks which provide less than the required soil volume, alternate locations and/or in-lieu fees are the preferred approach to meeting the street tree requirements, contact PDS for approval requirements.

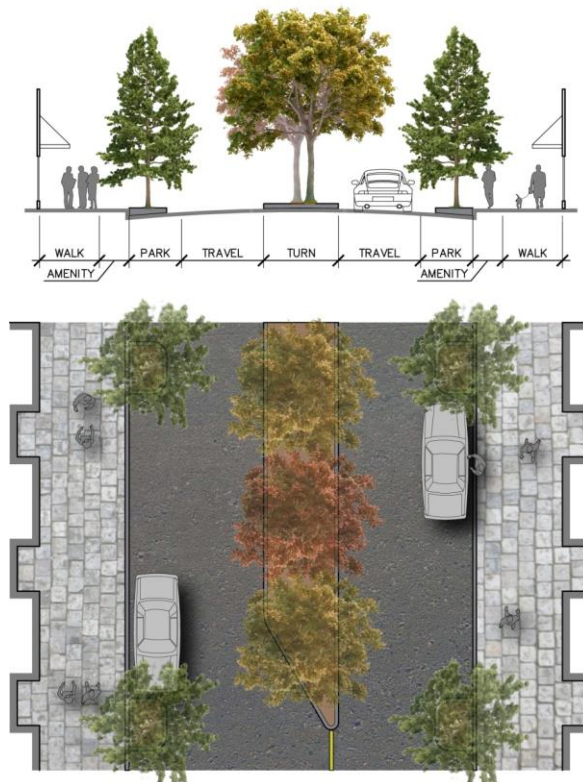
Trees planted in pots do not count towards street tree requirements, as defined in TMC 13.06.090B, due to the impeded ability of the tree to reach its full intended size and function. Trees planted in raised planting beds may count towards the Street Tree requirement only if it can be demonstrated that the raised bed meets the required minimum soil depth and unpaved planting area requirements contained in section 4.2.6 of the UFM.

Permission from the City Engineer for alternative placement of street trees in the Right-of-Way (ROW) is required. The graphics below illustrate various alternative placement options.

## TREE PLACEMENT IN BULB-OUTS



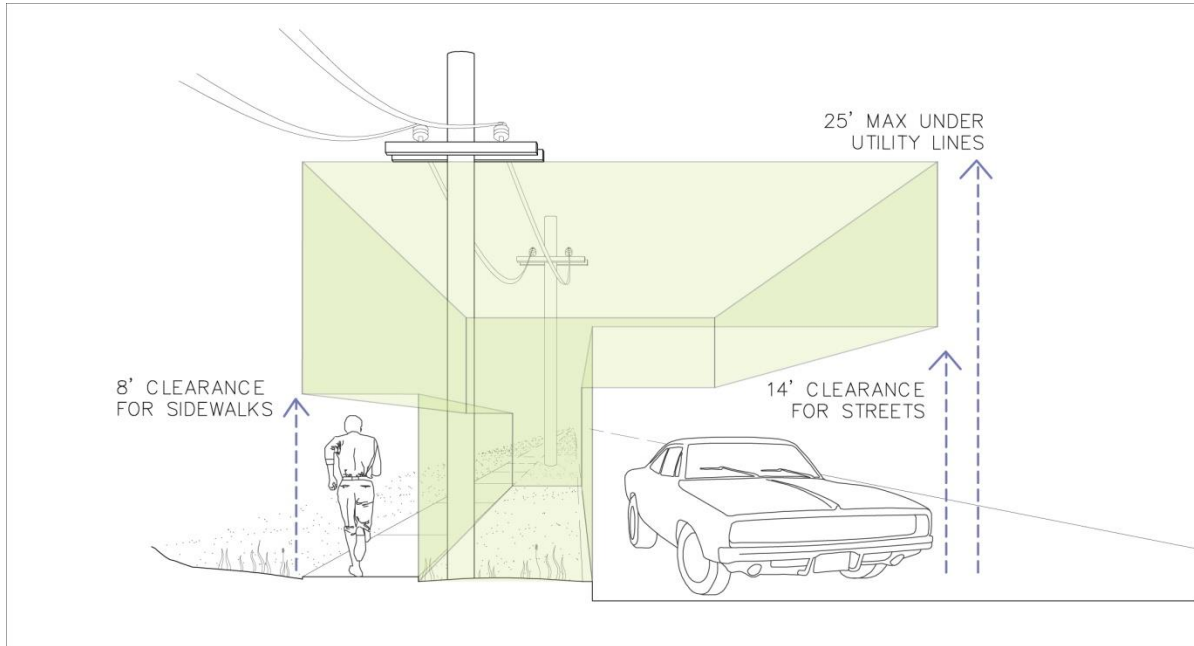
## TREE PLACEMENT IN MEDIANS AND CONVERTED PARKING SPACES



#### 4.2.5 Tree Placement under Overhead Utilities

In order to avoid conflicts with overhead utilities, trees planted under overhead utility lines must be tree species that have a maximum mature height (at 25 years of age) not greater than 25 feet. For preapproved trees which meet this criteria, refer to Appendix 7, Approved Tree List.

The graphic below illustrates the clearance constraints of a tree planted under overhead utilities.



#### 4.2.6 Soil Depth and Unpaved Planting Area

A minimum 3 foot depth of amended existing native soil or new topsoil non-mechanically compacted to account for settling shall be provided for all newly transplanted trees, except when the tree is planted within the drip line of existing mature trees. In the case of street trees, the finished soil level including mulch (finished grade) shall be one inch below the adjacent pavement surface or curb. Refer to Standard Plan LS-01 Street Tree Planting Detail.

All newly transplanted trees shall be provided a minimum unpaved planting area as follows:

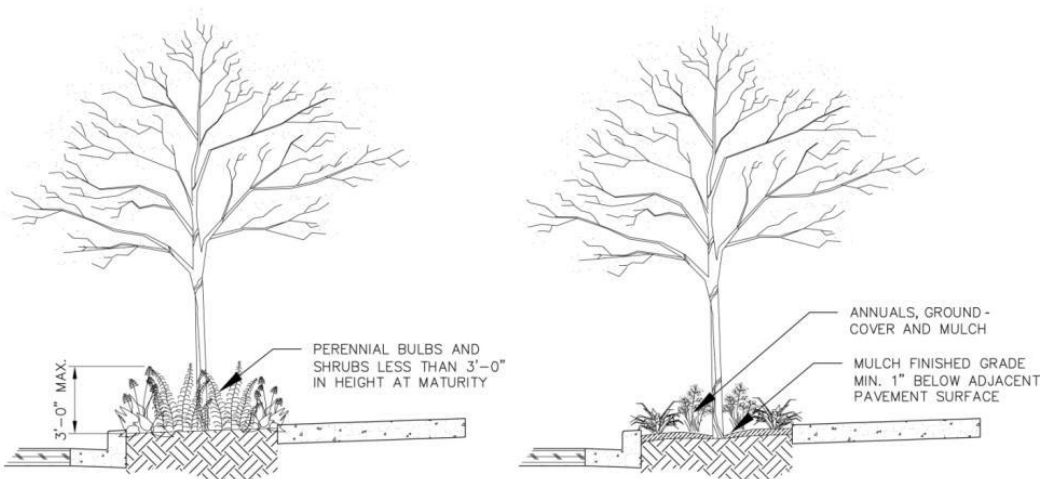
Minimum Unpaved Planting Area per Tree			
	Small Trees *	Medium Trees *	Large Trees *
Minimum unpaved planting area (sq. ft.):	24	40	60
Minimum tree pit width (any direction) (ft.):	4	5	6
Typical tree pit length (ft.)	6	8	10
Minimum soil volume (cu. ft.):	72	120	180

\* as defined in glossary under "Tree Sizes"

For specific requirements regarding paving around existing trees, refer to Chapter 7 Tree Protection During Construction.

Approved options for the treatment of unpaved planting areas include:

- Planting: groundcovers, perennials and shrubs with mulch covering exposed soil area. Plants (other than trees) must be less than 3 feet in mature height if planted in the public right-of-way.
- Mulch: organic wood chip mulch and/or permeable inorganic mulch. Finished grade after mulch application shall be a minimum of 1” below the adjacent pavement surface or curb.



#### 4.2.7 Tree Spacing Standards

It is recommended that all required trees are planted according to the minimum spacing standards listed below in order to achieve their full benefits. The distance between trees is measured from stem to stem, referred to as “on-center” (OC). The distance between trees and structures shall be from stem to structure wall.

Minimum Spacing Standards for Trees (OC)			
	Small Trees *	Medium Trees *	Large Trees *
<b>Minimum spacing from primary structures and other trees, in feet:</b>	10	25	40

\* as defined in glossary under “Tree Sizes

Note: TMC13.06.090B states that the minimum spacing requirements for small, medium and large trees is 10 feet, 25 feet and 40 feet respectively. These minimum tree spacing requirements may be reduced to 10 feet for small trees, 20 feet for medium trees, and 30 feet for large trees if it can be demonstrated that the reduced spacing will not have any negative impacts on the health of the trees.

For tree spacing and minimum unpaved area standard plans, refer to Standard Plan No. LS-03 Tree Well Dimension.

#### 4.2.8 Tree Setback Standards

The following are minimum tree setback and clearance standards to avoid infrastructure conflicts:

<b>Minimum Tree Placement Setback Checklist</b>	
<b>Center Line of Tree to Center Line of:</b>	Distance (feet)
<input type="checkbox"/> <b>Street Corner (extension of outside face of curb)</b>	25
<input type="checkbox"/> <b>Stop or Yield Signs</b>	25
<input type="checkbox"/> <b>Utility Poles</b>	15
<input type="checkbox"/> <b>Other Traffic Control Signs</b>	5
<b>Center Line of Tree to Edge of:</b>	
<input type="checkbox"/> <b>Driveways</b>	5
<input type="checkbox"/> <b>Face of Curb</b>	2.5
<input type="checkbox"/> <b>Pavement</b>	2
<b>Edge of Tree to Edge of:</b>	
<input type="checkbox"/> <b>Utility Worker Access Lids</b>	5
<input type="checkbox"/> <b>Gas Shutoff Valves</b>	5
<input type="checkbox"/> <b>Fire Hydrants and Hydrant Branches</b>	10
<input type="checkbox"/> <b>Water Meter, Water Service and Water Mains</b>	5
<input type="checkbox"/> <b>Storm Inlets, Catch Basins and Manholes</b>	5
<input type="checkbox"/> <b>Storm/Sanitary Service Connections and Mains</b>	5

<b>Minimum Tree Clearance (at Maturity) Checklist</b>	
<b>Lowest Branch to Surface of:</b>	Branch Clearance (feet)
<input type="checkbox"/> <b>Streets</b>	14
<input type="checkbox"/> <b>Sidewalks</b>	8

### 4.3 SHRUBS

Existing shrubs, which comply with the minimum plant sizes below, may count toward the required plantings. Invasive and Noxious Weeds as defined by the Pierce County Noxious Weed Control Board are not permitted to be planted in the landscaped areas. Fruit producing shrubs may be planted in all landscaped areas, provided that they meet all other applicable requirements for sizing and diversity. Shrubs planted adjacent to roadways and sidewalks (within 15 feet of sidewalk/curb edge) in the right-of-way should have a maximum mature height of three feet in order to maintain site distance for vehicles and pedestrians.

For shrub transplanting standards, refer to Standard Plan LS-05 Shrub Planting.

#### 4.3.1 Shrub Diversity

When planting shrubs to satisfy landscaping requirements the following standards must be applied:

- If more than 25 shrubs are required, no more than 20 percent may be of one species.

#### 4.3.2 Shrub Stock

- All shrubs provided shall be a minimum 1-gallon container size at the time of planting, or 18-inches in height if bare root stock is used.

### 4.4 GROUNDCOVER

Turf forming grasses and mulch are not considered groundcover. Invasive and Noxious Weeds as defined by the Pierce County Noxious Weed Control Board are not permitted to be planted in the landscaped areas. Fruit producing groundcovers may be planted in all landscaped areas, provided that they meet all other applicable requirements for sizing and diversity.

For groundcover transplanting standards, refer to Standard Plan LS-06 Groundcover Planting.

#### 4.4.1 Groundcover Stock

- Groundcover plants provided shall be at least a 4-inch pot size, 10-inch plugs/cones or 6-inches in height if bare root stock is used at the time of planting.

#### 4.4.2 Groundcover Spacing

Groundcover plants are required to be planted in the remainder of the landscaped area, not otherwise covered by trees and shrubs, so that they fill the area within the first three years of planting. The recommended spacing between individual groundcover plants is commonly described on the label accompanying plant material and/or from published horticultural sources. Groundcover width at maturity can also be used to determine groundcover plant spacing.

The following steps can be used to calculate the quantity of groundcover plants needed to fill a given area using a standard triangular spacing pattern:

Step 1) Convert the area of planting space from square feet to square inches (multiply square feet by 144).

Step 2) Calculate the space occupied (sq. in.) per plant =

X = mature width or recommended plant spacing

Y = spacing between plant rows, (which is equal to X (0.866)

X\*Y = space occupied in square inches per plant

The table below illustrates this process for typical plant spacing (mature width) of groundcover plants.



Spacing in inches between plants (mature width) = X		Spacing in inches between rows of plants = Y or 0.866X			Space occupied in square inches per plant = X(Y)	
X=	6	Y =	6(0.866)	=5.196	6(5.196)	=31.176
X=	8	Y =	8(0.866)	=6.928	8(6.928)	=55.424
X=	10	Y =	10(0.866)	=8.66	10(8.66)	=86.6
X=	12	Y =	12(0.866)	=10.392	12(10.392)	=124.704
X=	18	Y =	18(0.866)	=15.588	18(15.588)	=280.584
X=	24	Y =	24(0.866)	=20.784	24(20.784)	=498.816
X=	30	Y =	30(0.866)	=25.98	30(25.98)	=779.4
X=	36	Y =	36(0.866)	=31.176	36(31.176)	=1122.336
X=	48	Y =	48(0.866)	=41.586	48(41.586)	=1996.128

Step 3) Calculate the total number of plants needed for the planting area.

$$\frac{\text{total planting area in square inches}}{\text{space occupied per plant}} = \text{total number of plants}$$

The following table provides examples of the plant quantities needed to fill 100 square feet of planting space.

If the recommended spacing (mature width) is:	Plants required to fill 100 square feet of area:
6 inches	460
8 inches	260
10 inches	167
1 foot	115
1.5 feet	51
2 feet	29
2.5 feet	19
3 feet	13
4 feet	7

An illustrated example of the triangular spacing pattern for groundcover spaced apart at 12" on center in a planting area that is 15 square feet is shown below.

