Tree and Landscaping Manual

City of Portland, Oregon - Bureau of Development Services

1900 SW Fourth Avenue • Portland, Oregon 97201 | 503-823-7300 | www.portlandoregon.gov/bds

Guide to the Manual

The manual consists of several sections:

What rules apply and how to use the manual 3

This manual is intended as a guide to the Zoning Code sections dealing with trees and landscaping. Before finalizing your plans, contact the Bureau of Development Services Planning and Zoning section at 503-823-7526, or in the Development Services Center (DSC), first floor at 1900 SW 4th Avenue, Portland.

Frequently Asked Questions 9

This section presents information about why and how landscaping is required, what permits may be needed, and related matters.

Landscaping standards 12

This section defines and illustrates the different landscape standards. L1 is general landscaping, L2 and L3 are screening standards, L4 is a standard for high walls, L5 is a standard for berms, and P1 is a standard for landscaping the interior of parking lots. (Also See Title 11, Trees, for tree preservation and tree planting requirements for development situations.)

Maintenance, irrigation, protection, etc. 33

This section outlines requirements for landscape plans, landscape installation and irrigation, maintenance, and protection of trees and other plant materials. It also shows how to maintain sight lines for security and to keep plants from blocking pedestrian ways.

Plant materials and the Suggested Plant Lists 36

This section lists trees and other plants that may be suitable for areas where landscaping is required. In addition, the section includes such information as the spacing distance of different plants, the size categories of trees, whether plants are native to Portland, and whether they prefer sun, shade, or a mixture of the two.

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What Rules Apply?

The landscaping standards that apply to your site depend upon the zoning and the type of development you plan. Each type of development has certain landscaping standards that usually apply. The amount of area that must be landscaped may include a minimum landscaped area, landscaped setbacks, screening, others or combination of these.

Caution: this table is intended only to guide you to the standards that apply to most projects. Some projects require special screening, native plantings or other specialized landscaping. In addition, the City's Stormwater Management Manual and Erosion Control Manual have separate landscaping requirements.

Zone and Type of Development	Requirements	Landscaping Standards
Single Dwelling Zones		
1) 1&2 Family	1) Tree preservation and planting, 11.50 & 11.60	Title 11
Multi-Dwelling Zones		
1) 1&2 Family	1) Tree preservation and planting, 11.50 & 11.60	Title 11
2) Multi Family	2) Minimum landscaped area, Table 120-3 and 33.120.235	L1
	Setbacks, Table 120-3 and 33.120.220	L1, L2
	Parking Areas and Driveways, 33.266.130	L2, L3, P1
Commercial Zones		
1) 1&2 Family	1) Tree preservation and planting, 11.50 & 11.60	Title 11
2) All other (multi-family, retail, office, other commercial)	2) Minimum landscaped area, Table 130-3 and 33.130.225	L1
	Screening, 33.130.235	L3
	Landscaping abutting an R-zoned lot line, Table 130-4 and 33.130.215.B	L3
	Parking Lots, 33.266.130	L3, L2, P1
	3) Exterior display and storage landscaping, 33.130.245	L3
Employment and Industrial Zones	1) Minimum landscaped area, Table 140-3 and 33.140.225	L1
	Screening, 33.140.235	L3, L2
	Landscaping abutting an R-zoned lot line, Table 140-3 and 33.140.215.B	L3
	Parking Lots, 33.266.130	L2, L3, P1
	2) Exterior display and storage landscaping, 33.140.245	L1, L2, L3, L4

There are several other factors that may affect the rules that apply to your landscaping. For example, special rules apply to work in an environmental zone.

The table below shows where to look for guidance about other landscaping rules:

Development or activity	Find it in Zoning Code	Find it in the manual
Plant and tree selection	33.248.030 Plant Materials	Plant Material Selection and the Suggested Plant Lists
Installation, maintenance and irrigation	33.248.040 Installation and Maintenance	Maintenance, irrigation, protection, etc. Planting information is also presented in the Plant Material Selection and Suggested Plant Lists sections.
Tree protection	11.60.030 Tree Protection Requirements Tree preservation plans are described in 11.50 Tree Preservation Plans.	Maintenance , irrigation, protection, etc. Describes the tree protection requirements and alternative tree preservation plans.
Tree preservation for Lend Divisions	33.630	Not in the Manual
All development in Environmental zones	33.430 Environmental Zones • Columbia South Shore • Cascade Station • Pleasant Valley	Not in the Manual
All development in Greenway zones	33.440 Greenway Zones	Not in the Manual
Tree cutting	In both Title 20 and Title 11.	See the Frequently Asked Questions section in the front of the Manual.
Street trees	Regulated by the Urban Forester. Not in the Zoning Code.	Not in the Manual
Stormwater maintenance	In Title 17 and the Stormwater Management Manual. Not in the Zoning Code	Not in the Manual
Erosion control	In Title 10 and the Erosion Control Manual. Not in the Zoning Code	Not in the Manual

How to Use the Manual

This manual describes how to landscape areas that are required by the Zoning Code to have trees or other landscaping. It does not include information about street trees, which are regulated by the City's Urban Forestry Division, 503-823-4489.

The manual also does not describe the City's requirements for stormwater management or erosion control. For stormwater management requirements, refer to the *Stormwater Management Manual*, which is available on the Bureau of Environmental Services website at *www.portlandoregon.gov/bes*. For erosion control requirements, refer to the *Erosion Control Manual*, located on the Bureau of Development Services website at *www.portlandoregon.gov/bds*.

To use the *Tree and Landscaping Manual*, you should know what kind of development you want, where the property is, what zone the property is in (including any overlays or plan districts), and the general layout of the development you propose (i.e., at least a rough site plan).

For all development projects, you should contact the Planning and Zoning staff at 503-823-7526 or come into the Development Services Center at 1900 SW 4th Avenue for help determining the specific zoning regulations for your site and whether landscaping is required.

For all development of new structures or parking facilities, here's a list of the information you should gather about your project:

Site Information	
Location or address:	
Base zone	Overlay zone
Plan Districts	Site Area
Answer the following for all projects other than one and two family residences:	
Required setback	Length of each lot line
Lot line abutting an R-zoned lot (L3 required in C, E, and I zones)	
❑ yes ❑ no Will any setback be 30 feet deep or more? L1, plus extra shrubs if wide	
Minimum landscaped area required (at least L1)	
Requirement for screening abutting an R-zoned lot? (L3)	
Parking Lots (see 33.266.130 in the Zoning Code)	
Number of parking spaces	
Interior landscaping required (if over 10 spaces) @ 45 sq. ft. per space (P1)	
Length of parking lot edges (perimeters, L2 unless abutting R-zoned lot)	
Width of perimeters, ft.	Area of perimeters (length x width), sq. ft.

After you have gathered this information, read in the Manual about the standards that apply (L1, L2, etc.). Then go to the *Landscaping Calculations Worksheet* and *Plant Coverage* pages.

Use the *Landscaping Calculations Worksheet* to calculate how many trees, shrubs, and ground cover plants you will need to fill your landscaped areas.

Some of the calculations are based on numbers of parking spaces, some on square footage, and some on the length of perimeters.

Landscaping Calculations Worksheet

Landscape Area Calculations		
Perimeter length, in feet	Perimeter area, in square feet	L1 area, in square feet

Parking Lot Calculations, where applicable	
Number of parking stalls	Parking stalls with front 2 feet landscaped
Interior landscaped area required in square feet (at 45 sq.ft. per parking stall)	
Parking lot perimeter length, in feet	Parking lot perimeter area, in square feet

Plant Materials Calculations

Trees	**Perimeters (L standards)**			**Parking Lot Interiors**		
	Standard	**Linear feet**	**Number of trees**	**Standard**	**Number of stalls**	**Number of trees**
Large	1 tree per 30 linear feet			1 tree per 4 parking stalls		
Medium	1 tree per 22 linear feet			1 tree per 3 parking stalls		
Small	1 tree per 15 linear feet			1 tree per 2 parking stalls		
TOTALS						

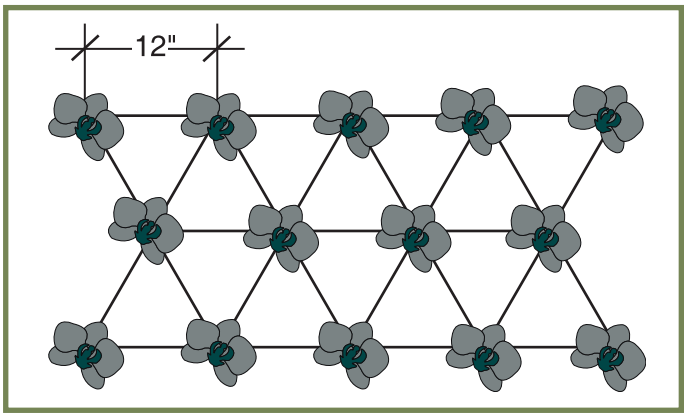
Shrubs	**Perimeters (L standards)**			**Parking Lot Interiors**		
	Standard	**Linear feet**	**Number of shrubs**	**Standard**	**Number of stalls**	**Number of shrubs**
Shrubs	1 shrub per ___ linear feet			1.5 shrubs per parking stall		
	1 shrub per ___ linear feet			1 shrub per stall with 2 front feet landscaped		
TOTALS						

Ground Cover	**Perimeters (L standards)**			**Parking Lot Interiors**		
	Coverage per 100 sq. feet	**Area in sq. feet**	**Number of plants**	**Coverage per 100 sq. feet**	**Area in sq. feet**	**Number of plants**
Plant #1	___ plants			___ plants		
Plant #2	___ plants			___ plants		
Plant #3	___ plants			___ plants		
Plant #4	___ plants			___ plants		
Plant #5	___ plants			___ plants		
Plant #6	___ plants			___ plants		
TOTALS						

Plant Coverage

The landscaping standards require that ground cover plants be planted so that they fill in the landscaped area within three years. The ground cover plant lists include plant spacing recommendations. If you select a plant not on the lists, you must provide the Bureau of Development Services (BDS) with plant spacing information either from published sources, such as the *Sunset Western Garden Book*, from Internet sources, or from cut sheets provided by the nursery. You must identify the source of the information so that BDS can verify it.

Ground cover plants other than turf forming grasses must be planted in triangular spacing, as shown below. In this illustration, the plants are planted on a 12 inch triangular spacing.



To calculate the number of ground cover plants needed to meet the standards, use the table below.

If the spacing for the plant is:	You need this many plant per 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
5 feet	5

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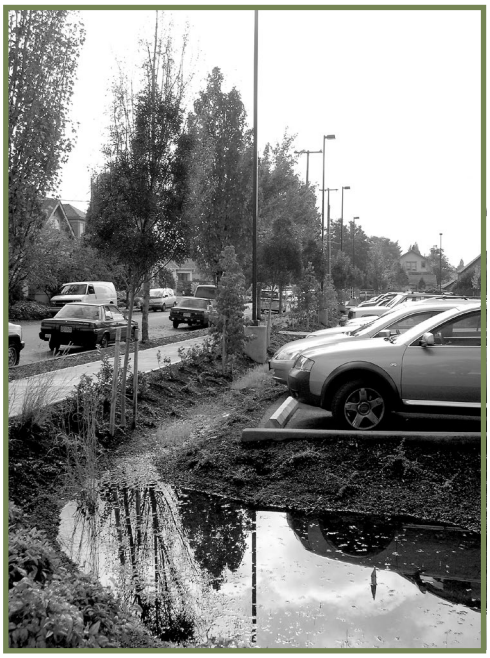
Tree and Landscaping Regulations of the Zoning Code Frequently Asked Questions

Q Why does the City require landscaping?

A Landscaping helps protect human health and the environment, protects property values and livability, and makes the urban environment more comfortable and pleasant. It does so by:

- Providing shade from the sun and shelter from the wind;
- Helping to treat and manage stormwater runoff;
- Reducing noise, visual, and lighting impacts onsite and on neighboring properties;
- Improving the appearance and function of public and private spaces;
- Reestablishing or preserving wildlife habitat and natural areas; and
- Preserving and enhancing Portland's urban forest.



Stormwater swale, recently planted

Q How does the Zoning Code require landscaping?

A The Portland Zoning Code requires landscaping in many situations. The Zoning Code specifies the type of landscaping, where the landscaping must be located on the site, and how much area must be landscaped.

Many different chapters of the Zoning Code require landscaping. The four most common types of required landscaping are trees for new houses, required landscaping areas on commercial sites and perimeter or screening landscaping such as around the edges of a site, and parking lot landscaping.

Q What does this manual cover?

A The Zoning Code specifies the type, location, and area of required landscaping. This manual provides additional information on the methods and materials to be used in required landscaping. The manual includes plant materials, planting methods, irrigation, maintenance, and similar information. In addition, the manual, will help you can calculate the number of trees, shrubs, and groundcover plants required and develop a landscaping plan.

Q How do I determine what landscaping is required?

A This manual is used together with the Zoning Code. First, you must know what zoning applies to your site. Each zoning designation has different landscaping requirements that specify what type of landscaping is required, where it must be located, and how much area must be landscaped. Once you know the zoning designation, you can find the types of landscaping required. Chapter 33.248 describes the different types landscaping.

Q Do I need a permit to install landscaping?

A Landscaping is usually part of a larger project, rather than a stand-alone installation. When you get a building permit for the whole project, it includes the landscaping.

A permit is required in the case where required landscaping is proposed without additional development; it allows the owner and the City to document that the required landscaping was installed.

Q How do I get my building permit?

A Come to the City's Development Services Center at 1900 SW 4th Avenue to apply for the necessary permit. City staff will help you through the process.

Q What information do I need to show on a landscape plan?

A In general, your building permit application needs to include a site plan that shows all required landscaping. The information that you need to show may vary somewhat depending on what you are building and on site-specific characteristics. You may include your landscaping plan on your site plan as long as all the necessary details are shown. You must include the information listed below on your landscaping plan:

- Layout and dimensions, and for parking lots, the amount of landscaped area;
- Proposed locations and numbers of plant materials and spacing;
- Plant type, both scientific and common names and size;
- Planting and tree protection details and specifications;
- Irrigation; and
- Any other elements required by the code; check the individual standards that apply to your project.

This manual also includes a worksheet to help calculate the numbers of plants needed. We recommend that you use the worksheet to calculate your plant requirements and then submit it with your landscaping plan.

Q Can I use existing trees and plants to meet the landscaping standards?

A Yes. In particular, you are encouraged to preserve older, larger trees wherever possible. If you intend to use existing trees and plants to meet the standards, you must show their locations, species, and sizes on your landscaping plan. In addition, if you are preserving trees, you must have a tree preservation plan.

Q What must be included in a tree preservation plan?

A A tree preservation plan includes both a site plan and a written statement. The written statement must be prepared by a certified arborist and must say that the trees to be preserved are healthy. The site plan must be drawn to scale and show all of the following:

- All trees to be preserved on the site, their species and diameter;
- The location of water, sewer, and other utility easements;
- The location of dry wells and soakage trenches; and
- How the City's Tree Protection Requirements are met, please see Title 11, Trees.

Q How is the landscaping inspected?

A Landscaping is inspected during the Erosion Control Permanent Measures inspection, which takes place at the end of a project, after all long-term soil stabilization measures are in place.

Q What if I have to make changes to my landscaping plan after it's approved?

A It depends on how your landscaping was approved.

Most landscaping is approved by meeting the standards in the Zoning Code. In this case, you can change the plant materials, spacing, and methods as long as your new proposal still meets the standards in the code. Changes must be approved, and a copy of the approved revisions to your landscaping plan must be on file with the Bureau of Development Services.

Sometimes landscaping is required as a condition of approval of a land use review (such as an adjustment or conditional use), and the species, placement, and maintenance are specified by the land use decision. In this case, you cannot change anything about the landscaping without going back through another land use review to modify your proposal.

Q How do I use this manual?

A First find the type of landscaping that the Zoning Code requires for your site.

Once you know which standards you need to meet, you can find in the manual illustrations and plain-language descriptions of them.

If you are looking for guidance about species of plants that may be suitable, check the Lists of Suggested Plants for Required Landscaping in the back of the manual, the Portland Plant List, and the Stormwater Management Manual. These lists show the size categories for many trees and give height and spacing information for shrubs and ground cover plants. The manual also contains a form for calculating the numbers of trees, shrubs, and ground cover plants needed at your site.

Q Does this manual tell me how to plant stormwater facilities?

A No, this manual only covers zoning code landscaping. Information specific to stormwater plantings is in the *Stormwater Management Manual* available at *www.portlandoregon.gov/bes*.

Q Does this manual tell me how to landscape for erosion control?

A No, specific measures for erosion control, including plantings, can be found in the *Erosion Control Manual* available online at ***www.portlandoregon.gov/bds***.

Q Where can I get more information about plants and landscaping?

A Expert information about local conditions and suitable plants is always available from professionals. Depending on your needs, you may wish to consult with landscape architects, arborists, landscape contractors, or nurseries.

A wealth of information is available on the Internet about plant selection. Here are some websites we consulted during development of this manual:

Oregon State University

- Landscape plants: ***http://oregonstate.edu/dept/ldplants***
- Trees of the Pacific Northwest: ***http://oregonstate.edu/trees/***

Washington State University

- Native plants: ***http://cahedb.wsu.edu/nativePlant/scripts/webMain.asp***

PLANTS National Database

- Plants native to the USA: ***http://plants.usda.gov/index.html***

Missouri Botanical Garden Kemper Center

- Plantfinder: ***http://www.mobot.org/gardeninghelp/plantfinder/alpha.asp***

North Carolina State University

- Horticulture on the Internet: ***http://www.ces.ncsu.edu/depts/hort/consumer/hortinternet/index.html***

Michigan State University Extension Service and Michigan Nursery and Landscape Association

- Ornamental Plants: ***http://www.msue.msu.edu/msue/imp/modzz/masterzz.html***

University of Connecticut Plant Database

- Trees, shrubs, and vines database: ***http://www.hort.uconn.edu/plants/***

City of Portland, Oregon

- Naturescaping for Clean Rivers: ***http://www.portlandonline.com/bes***
- Portland Plant List: ***http://www.portlandonline.com/planning***

Friends of Trees

- Trees database: ***http://www.friendsoftrees.org***

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Standard L1, General Landscaping.

Intent and description

The L1 standard is used where there is enough space that low density plantings are adequate to screen one use or development from another.

The L1 standard consists primarily of groundcover plants and trees. Where a landscaped area is 30 feet or more deep, the L1 standard also calls for a mixture of high screen and low screen shrubs.

Planting and layout

Required plants and spacing

- One large tree per 30 linear feet, one medium tree per 22 linear feet, or one small tree per 15 linear feet.
- If the landscaped area is deeper than 30 feet, either two high screen shrubs or three lowscreen shrubs per 400 square feet.
- Shrubs and trees may be grouped.
- Groundcover plants must be planted to fully cover the ground surface of the area within three years. Mulch does not qualify as ground cover.

Plant Diversity

- If there are more than eight required trees, no more than 40 percent of them can be of one species.
- If there are more than 24 required trees, no more than 24 per cent of them can be of one species.
- If there are more than 25 required shrubs, no more than 75 per cent of them can be of one species.

Plant Selection

- Plants may be selected from the *Suggested Plant Lists for Required Landscaping* or from other sources.
- If plants not listed on the *Suggested Plant Lists for Required Landscaping* are proposed, the mature size, hardiness, and spacing characteristics must be documented.
- Documentation may be from published sources (e.g. the *Sunset Western Garden Book*), or from information provided by nurseries, such as cut sheets.
- Plants on the Nuisance and Prohibited Plant Lists are prohibited in landscaping required by the Zoning Code.

Trees

- Trees may be broadleaf or conifers, and must be fully branched at the time of planting.
- Broadleaf trees must be at least 1.5 inches in diameter at the time of planting.
- Conifer trees at the time of planting must be at least 5 feet tall.

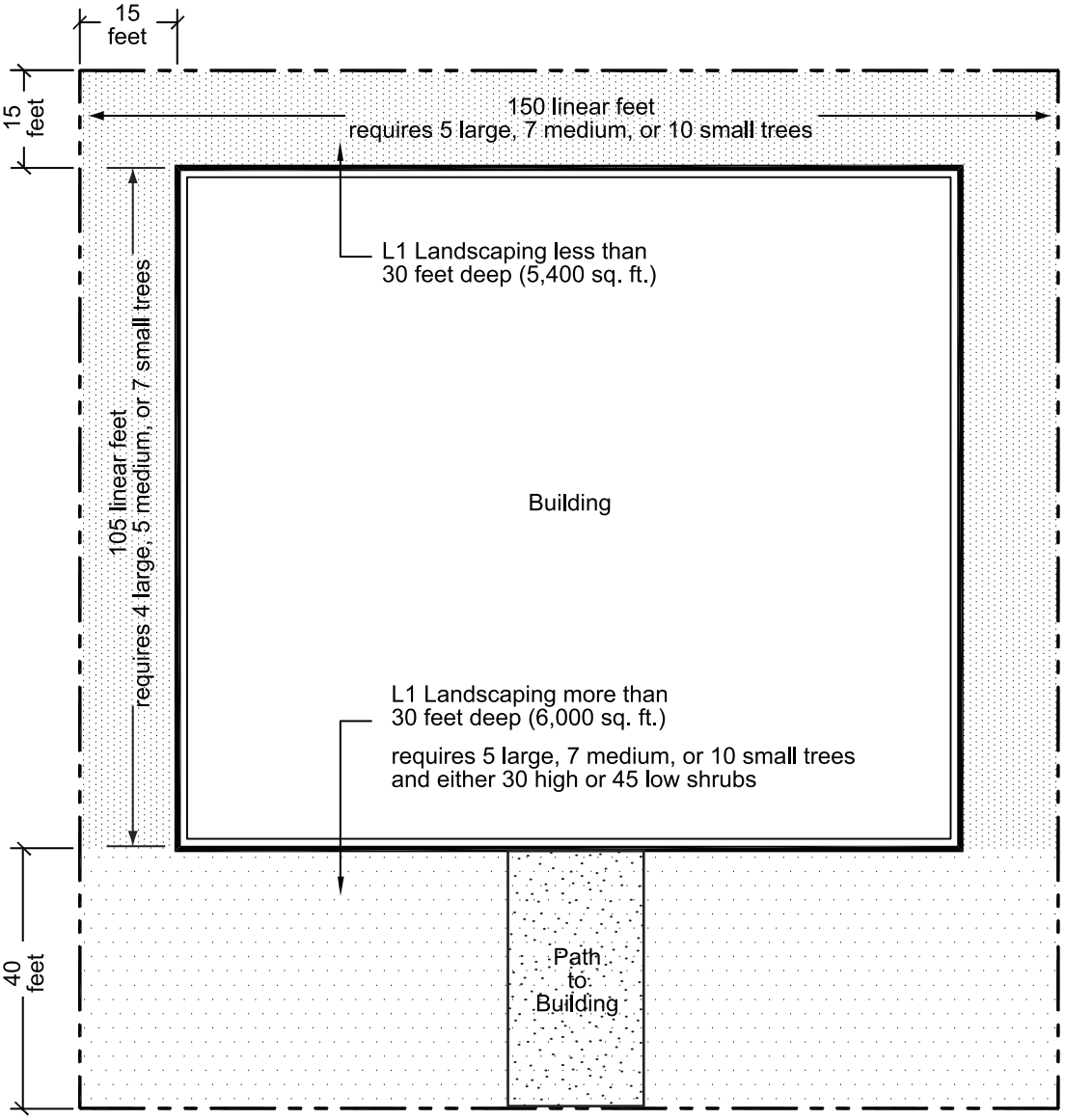
Shrubs

- Shrubs must be at least the one gallon size at the time of planting.
- Shrubs must be of sufficient size and number to meet the standards within 3 years of planting.

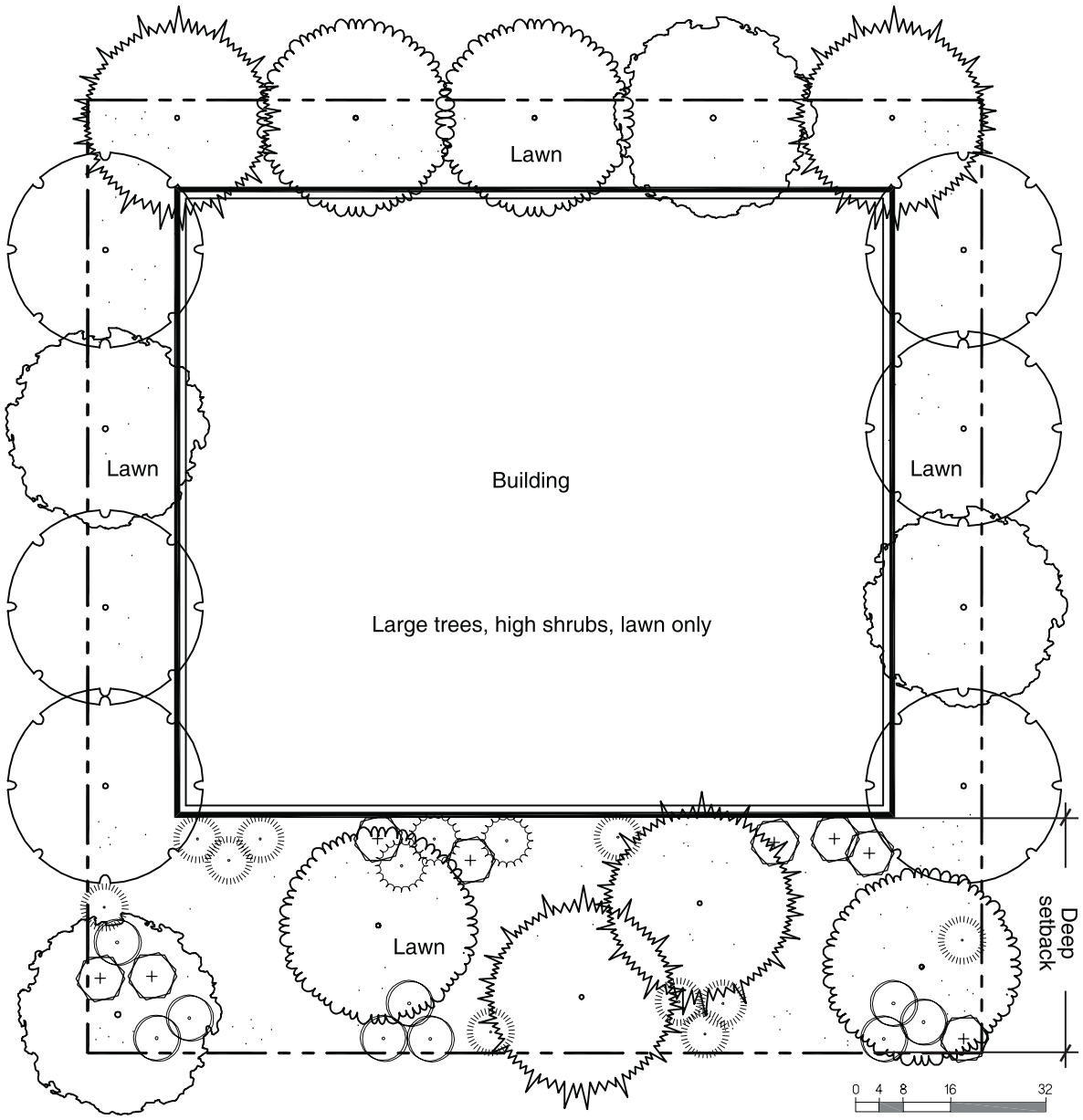
Ground cover plants

- Ground cover plants other than grasses must be at least the four inch pot size at planting.
- Ground cover plants, including grasses must be planted at a density that will cover the entire area within three years.
- Ground cover plants other than grass seed or sod must be planted in triangular spacing at distances appropriate for the plant species.

Stormwater management requirements are found in the *Stormwater Management Manual*, which is administered by the Bureau of Environmental Services. Erosion control best management practices are found in the *Erosion Control Manual*.

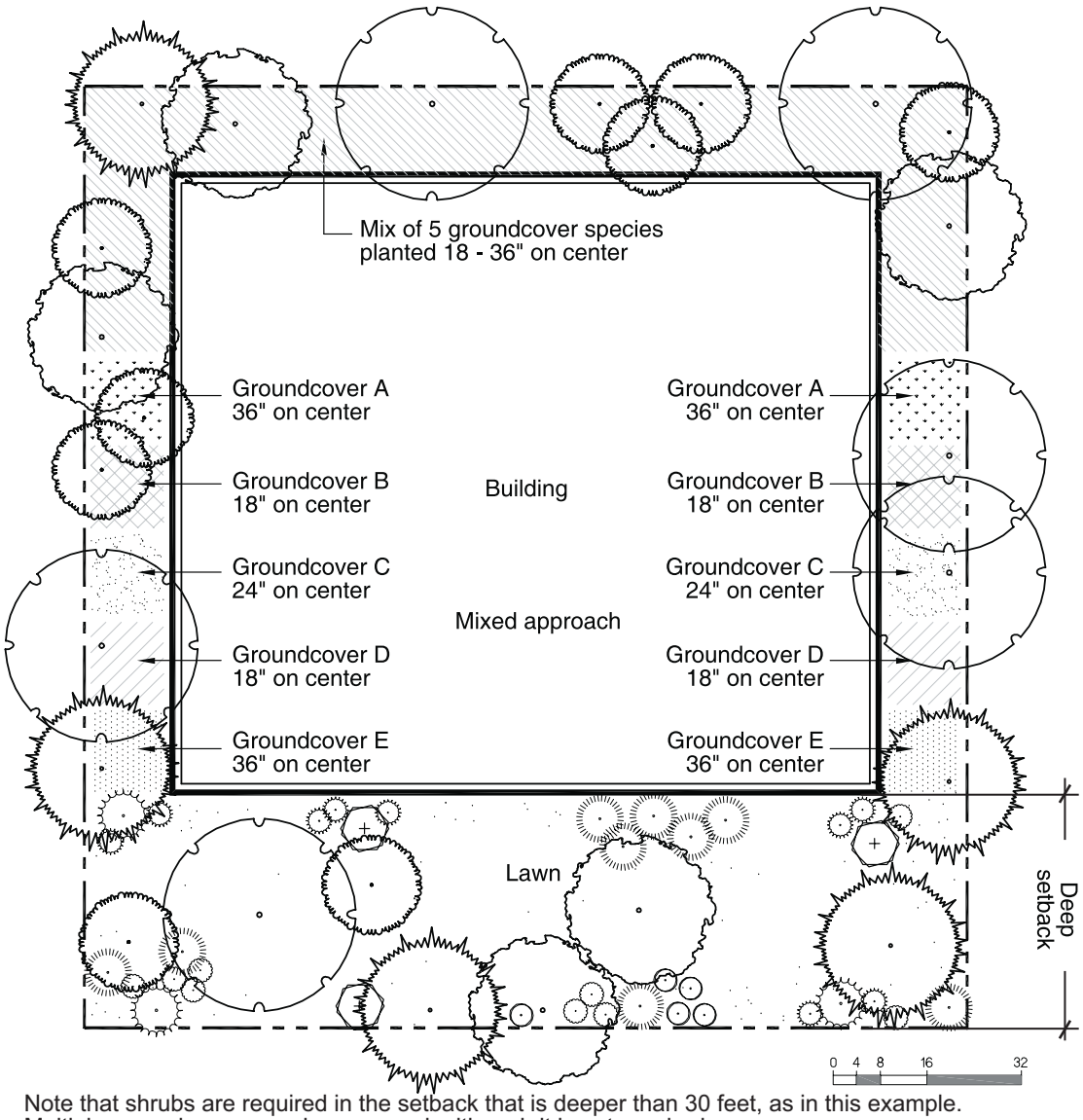


L1 Sample Property Layout Plan



Note that shrubs are required only in the setback that is deeper than 30 feet as in this example

L1, General landscaping using large trees, high shrubs, and lawn



Note that shrubs are required in the setback that is deeper than 30 feet, as in this example. Multiple ground cover species are used, although it is not required.

L1, A mixture of small, medium and large trees

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Standard L2, Low Screen, and L3, High Screen

Intent and description.

The L2 standard uses low screen shrubs (3 feet tall) to screen and soften the impacts of use or development while maintaining clear sight lines between areas. It is usually applied along street lot lines or surface parking lots.

The L3 standard uses high screen shrubs (6 feet tall) to provide physical and visual separation between uses or development. The L3 standard eliminates clear sight lines between areas.

Planting and layout

Required plants and spacing

- One large tree per 30 lineal feet, one medium tree per 22 lineal feet, or one small tree per 15 lineal feet.
- Shrubs must be evergreen and be planted in a line to form a continuous screen.
- Low-screen shrubs, L2, must grow to a height of 3 feet within 3 years.
- High-screen shrubs, L3, must grow to a height of 6 feet within 3 years.
- Trees may be grouped.
- Groundcover plants must be planted to fully cover the ground surface of the area within 3 years. Mulch does not qualify as ground cover.

Plant diversity

- If there are more than 8 required trees, no more than 40 per cent of them can be of one species.
- If there are more than 24 required trees, no more than 24 per cent of them can be of one species.
- If there are more than 25 required shrubs, no more than 75 per cent of them can be of one species.

Plant selection

- Plants may be selected from the *Suggested Plant Lists for Required Landscaping , included in the Tree and Landscaping Manual* or from other sources.
- If plants not listed in the *Suggested Plant Lists for Required Landscaping* are proposed, the size, hardiness, and spacing characteristics must be documented.
- Documentation may be from published sources such as the Sunset Western Garden Book, or from information provided by nurseries, such as cut sheets.
- Plants on the Nuisance and Prohibited Plant Lists are prohibited in landscaping required by the Zoning Code.

Wall Option

A masonry wall may be substituted for the shrubs. The wall must be 3 feet tall for the L2 standard and 6 feet tall for L3 standard. Trees and ground cover plants are still required.

Walls, screens, or fences (whether required or not) on street lot lines must be placed on the interior side of the landscaping. On other lot lines, the walls may be placed on the exterior side of the landscaping.

Trees

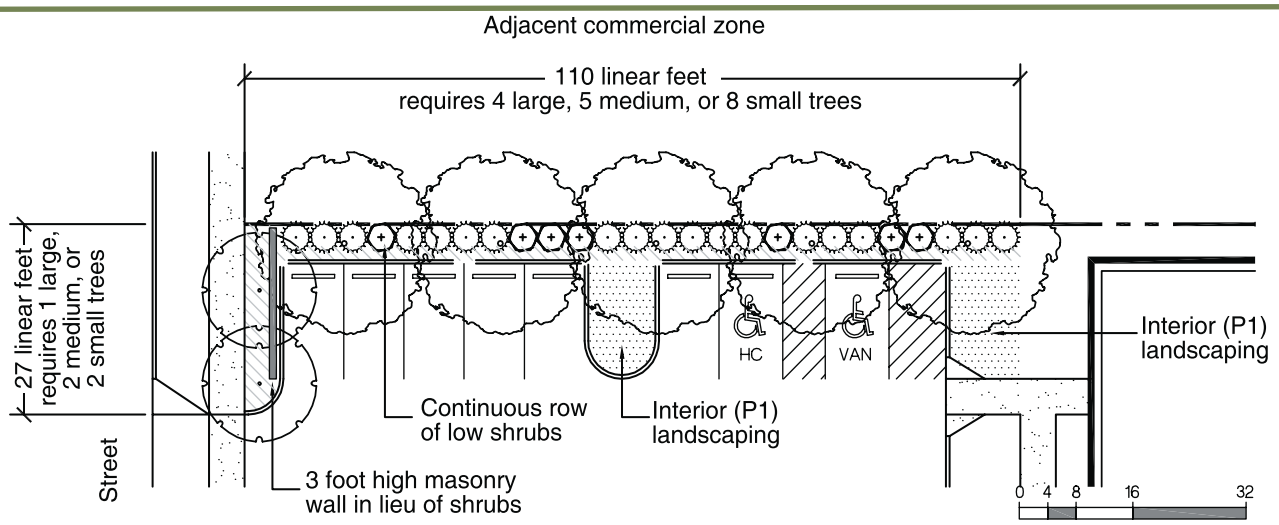
- Trees may be broadleaf or conifers, and must be fully branched at the time of planting.
- Broadleaf trees must be at least 1.5 inches in diameter at the time of planting.
- Conifer trees at the time of planting must be at least 5 feet tall.

Shrubs

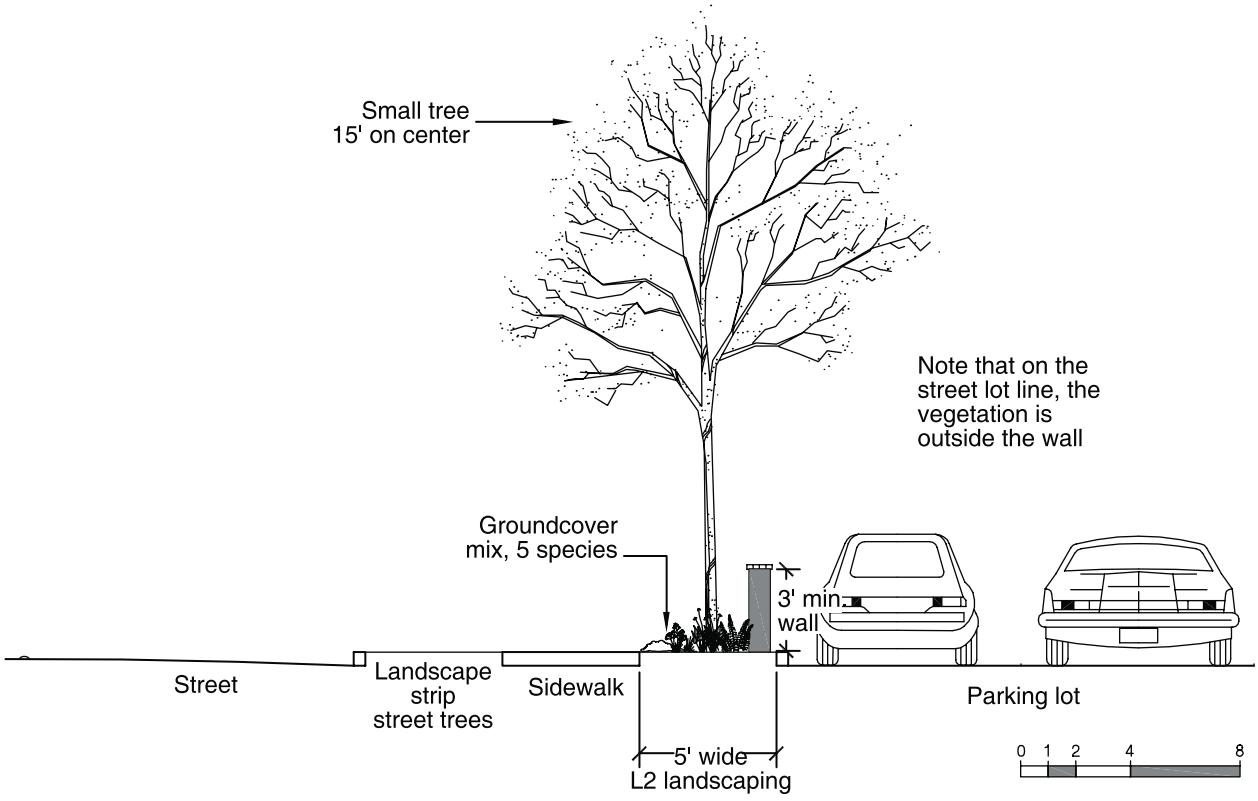
- Shrubs must be at least the one gallon size at the time of planting.
- Shrubs must be of sufficient size and number to meet the standards within 3 years of planting.

Ground cover plants

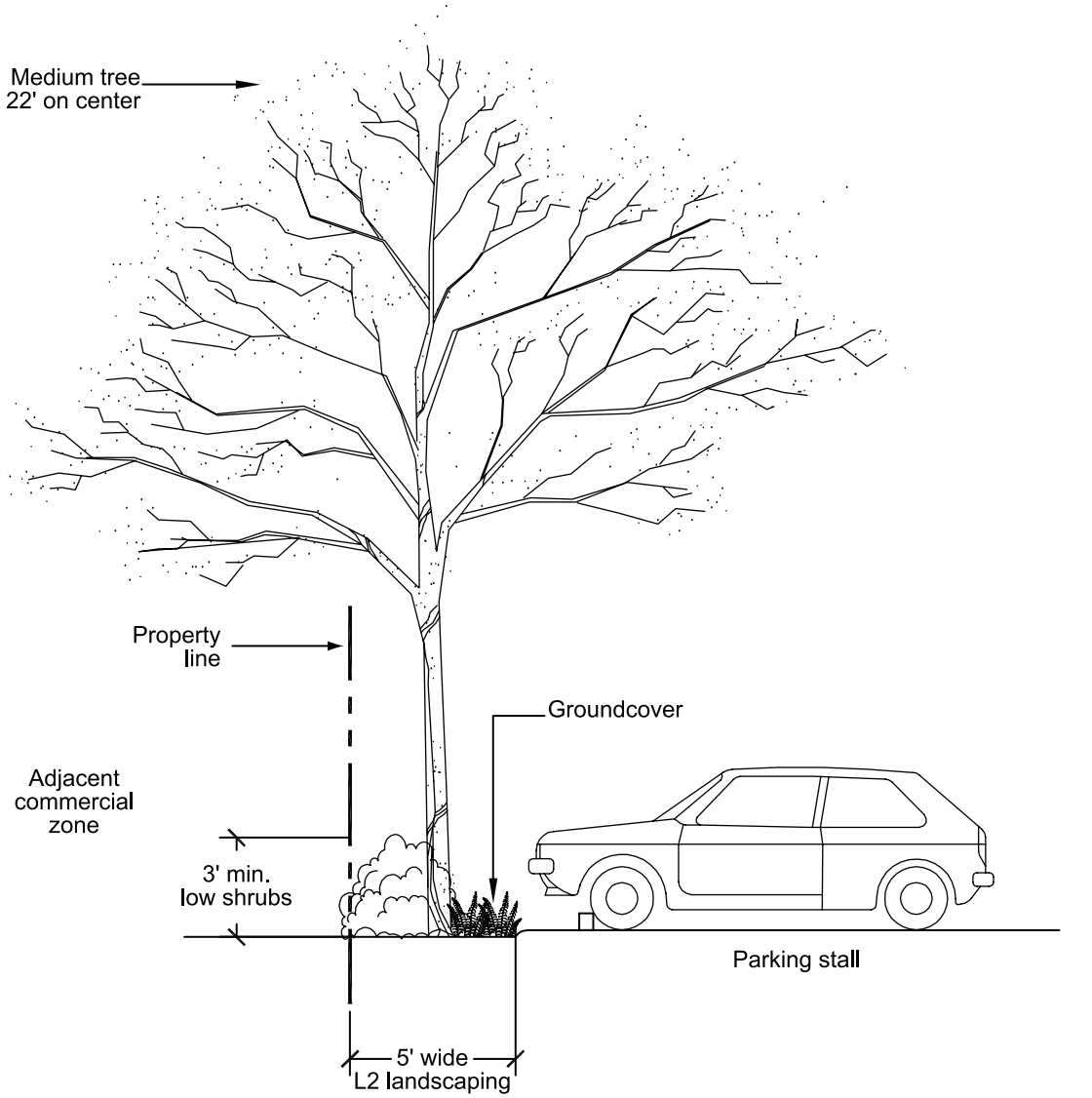
- Ground cover plants other than grasses must be at least the 4 inch pot size at planting.
- Ground cover plants, including grasses must be planted at a density that will cover the entire area within three years.
- Ground cover plants other than grass seed or sod must be planted in triangular spacing at distances appropriate for the plant species.



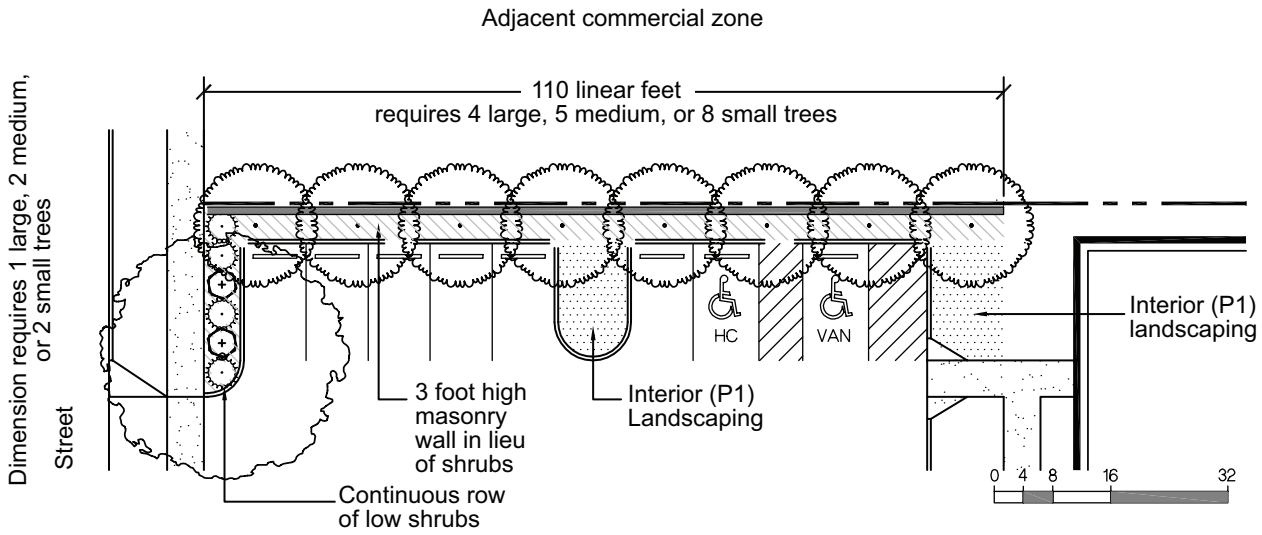
L2, Plan view of parking lot showing L2 landscaping with medium trees and low shrubs providing screening along the perimeter



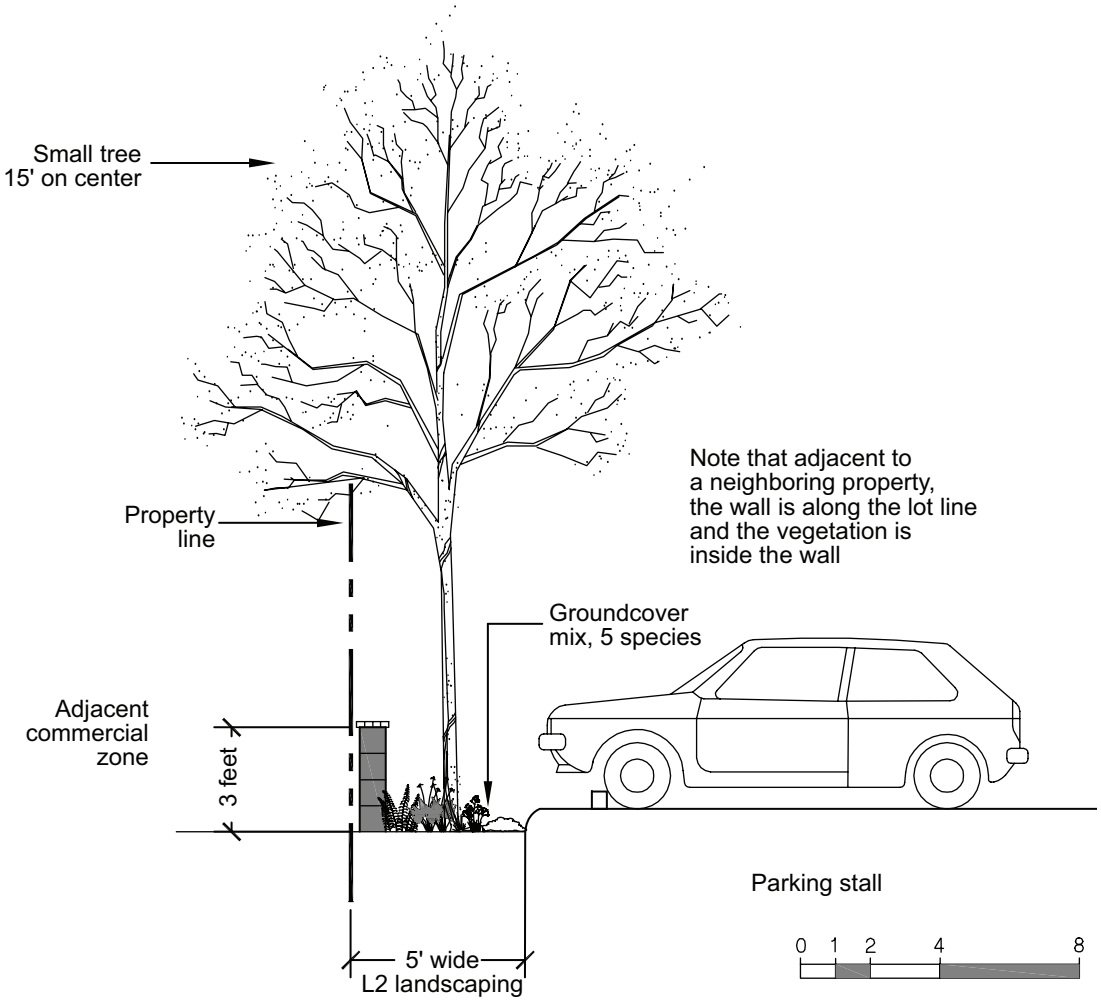
L2, Parking lot perimeter landscaping with low wall along a street lot line



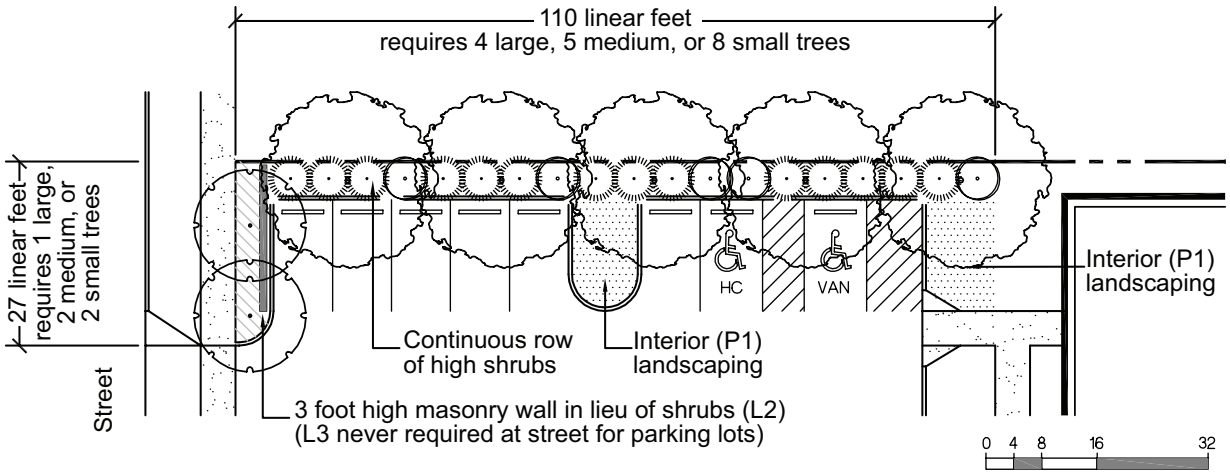
L2 , Parking lot perimeter landscaping showing low screen shrubs



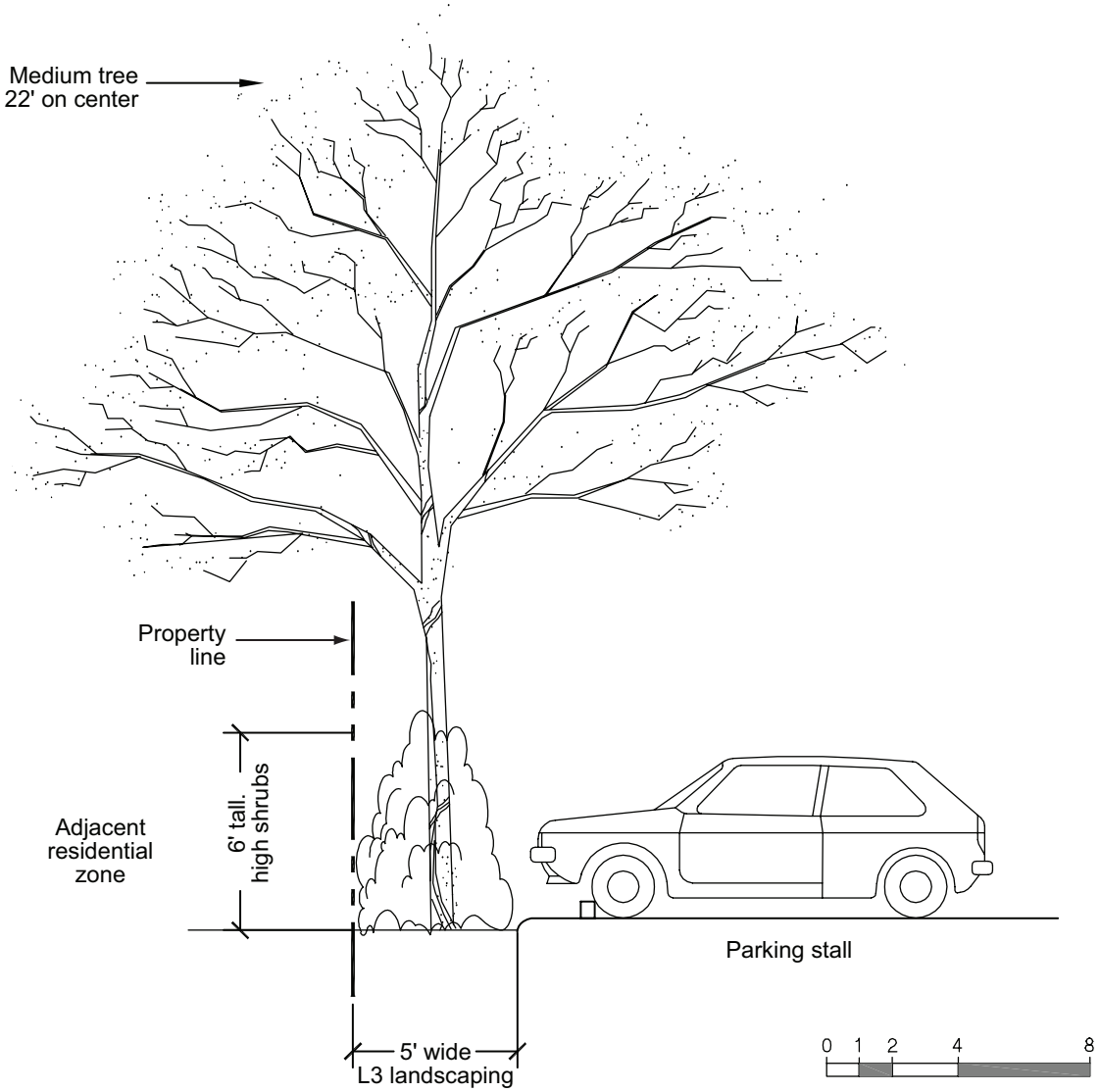
L2, Plan view of parking lot showing L2 landscaping with small trees and using a low wall on a lot line adjacent to a commercial property



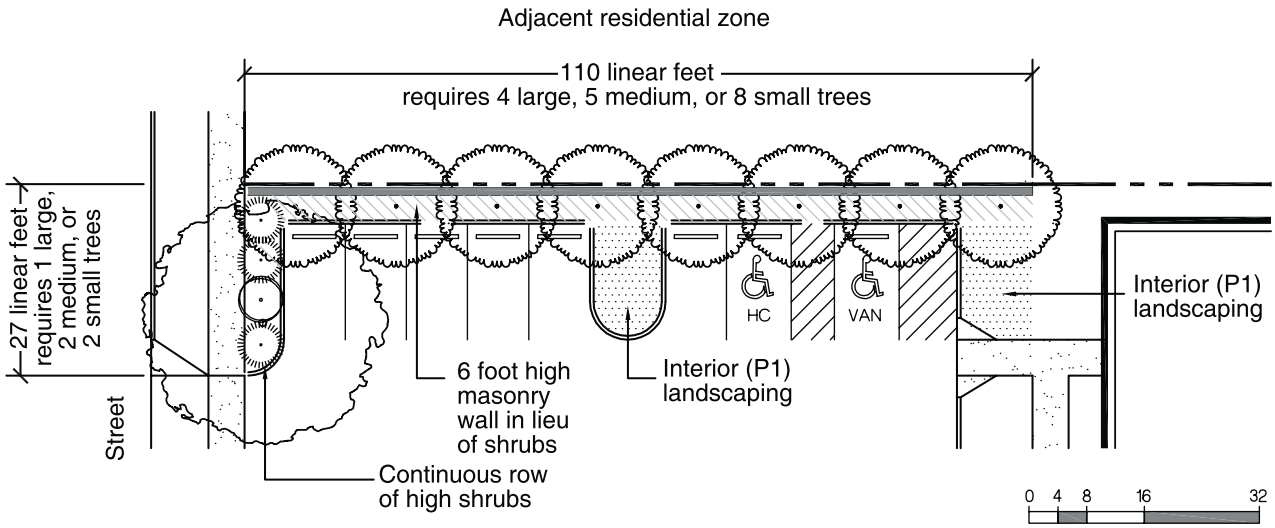
L2, Parking lot perimeter landscaping adjacent to an abutting commercial zone using a low wall



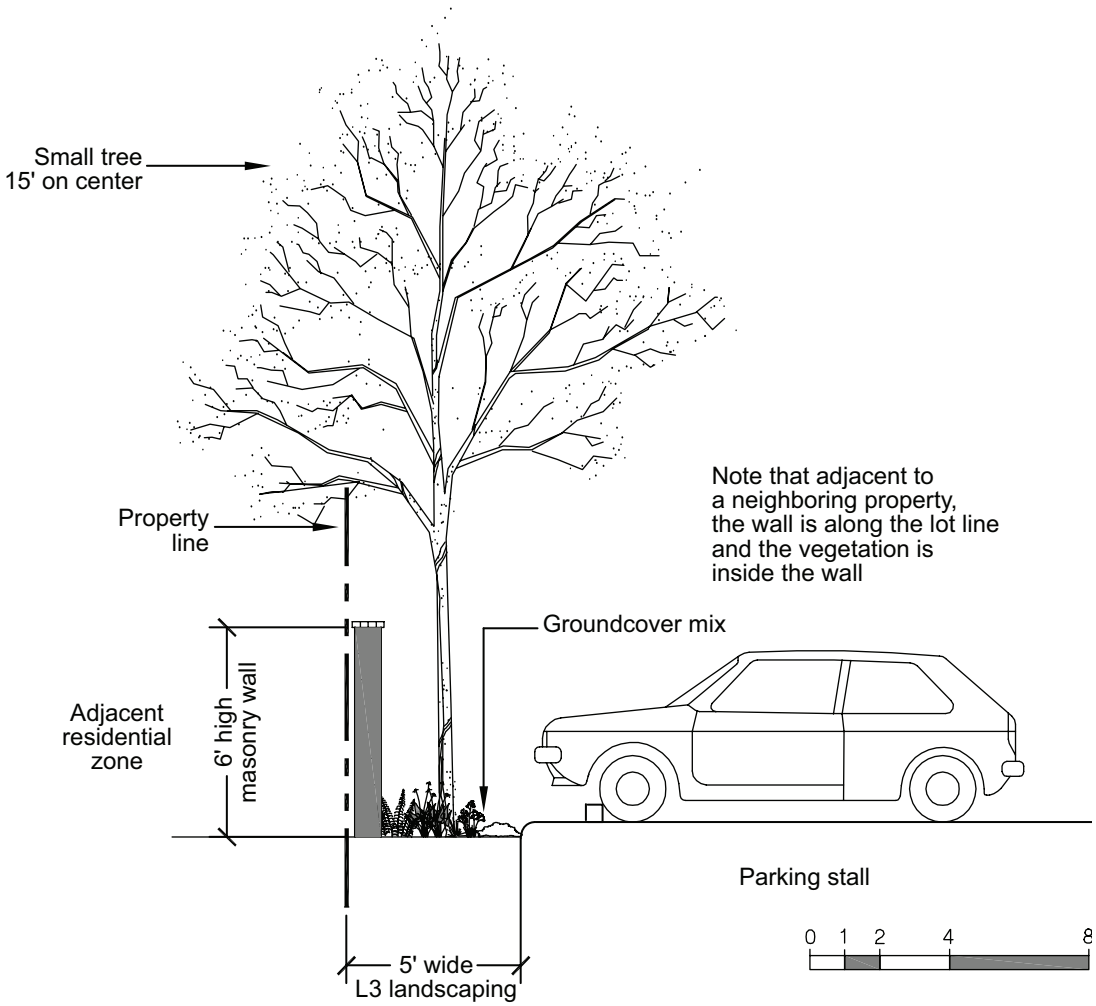
L3, Parking lot perimeter landscaping adjacent to residential zone using high screen shrubs and medium trees



L3, Parking lot perimeter landscaping adjacent to residential property using high screen shrubs



L3, Parking lot perimeter landscaping adjacent to residential zone using high wall and small trees



L3, Parking lot perimeter landscaping adjacent to residential zone using high wall

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Standard L4, High Wall, and L5, High Berm

Intent and description.

The L4 standard is used to provide extensive screening of both visual and noise impacts. It requires a 6-foot high wall in addition to plant materials. It is intended to screen adjacent properties where there is little available space and the potential noise or visual impacts are large.

The L5 standard calls for a berm – a raised earthen mound – and plant materials to provide extensive screening of visual and noise impacts and to protect sensitive adjacent uses or development. It requires sufficient space to place the berm, which is much wider than a wall or fence.

Planting and layout

Layout

- The L4 standard requires a 6 foot high masonry wall along the interior side of the landscaped area.
- The L5 standard requires a berm between 4 and 6 feet high.
- If the L5 berm is less than 6 feet high, low-screen shrubs must be planted on top of the berm to assure that the overall screen height is 6 feet.

Required plants and spacing

- Both the L4 and L5 standards require one large tree per 30 lineal feet of wall or berm, one medium tree per 22 lineal feet, or one small tree per 15 lineal feet.
- Trees may be grouped.
- In addition, the L4 standard requires four high shrubs per 30 lineal feet of wall.
- Groundcover plants must be planted to fully cover the ground surface of the area within 3 years. Mulch does not qualify as ground cover.

Plant diversity

- If there are more than 8 required trees, no more than 40 per cent of them can be of one species.
- If there are more than 24 required trees, no more than 24 per cent of them can be of one species.
- If there are more than 25 required shrubs, no more than 75 per cent of them can be of one species.

Plant selection

- Plants may be selected from the *Suggested Plant Lists for Required Landscaping* or from other sources.
- If plants not listed in the *Suggested Plant Lists for Required Landscaping* are proposed, the mature size, hardiness, and spacing characteristics must be documented.
- Documentation may be from published sources like the Sunset Western Garden Book, or from information provided by nurseries, such as cut sheets.
- Plants on the Nuisance and Prohibited Plant Lists are prohibited in landscaping required by the Zoning Code.

Trees

- Trees may be broadleaf or conifers, and must be fully branched at the time of planting.
- Broadleaf trees in must be at least 1.5 inches in diameter at the time of planting.
- Conifer trees at the time of planting must be at least 5 feet tall.

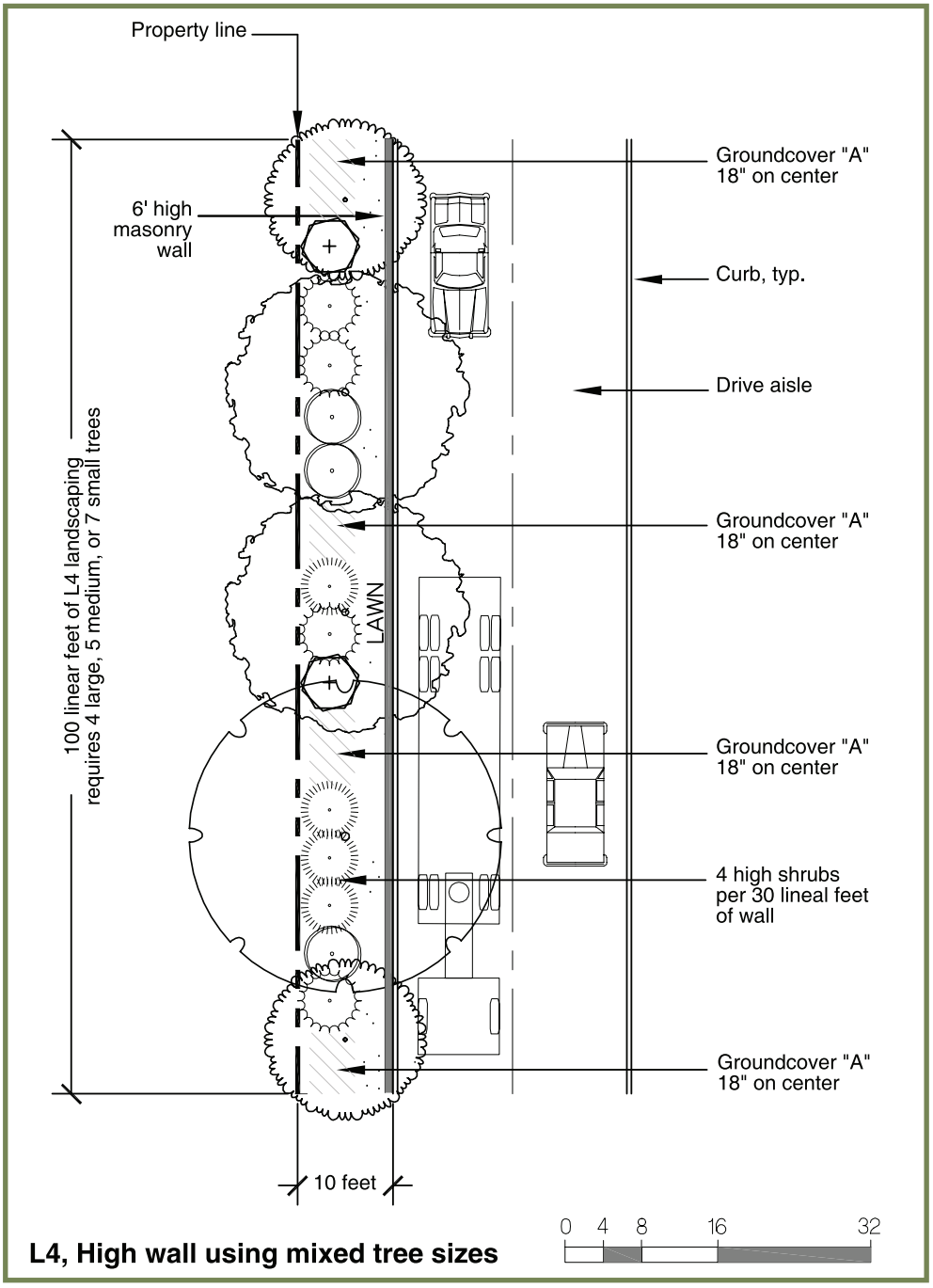
Shrubs

- Shrubs must be at least the one gallon size at the time of planting.
- Shrubs must be of sufficient size and number to meet the standards within 3 years of planting.

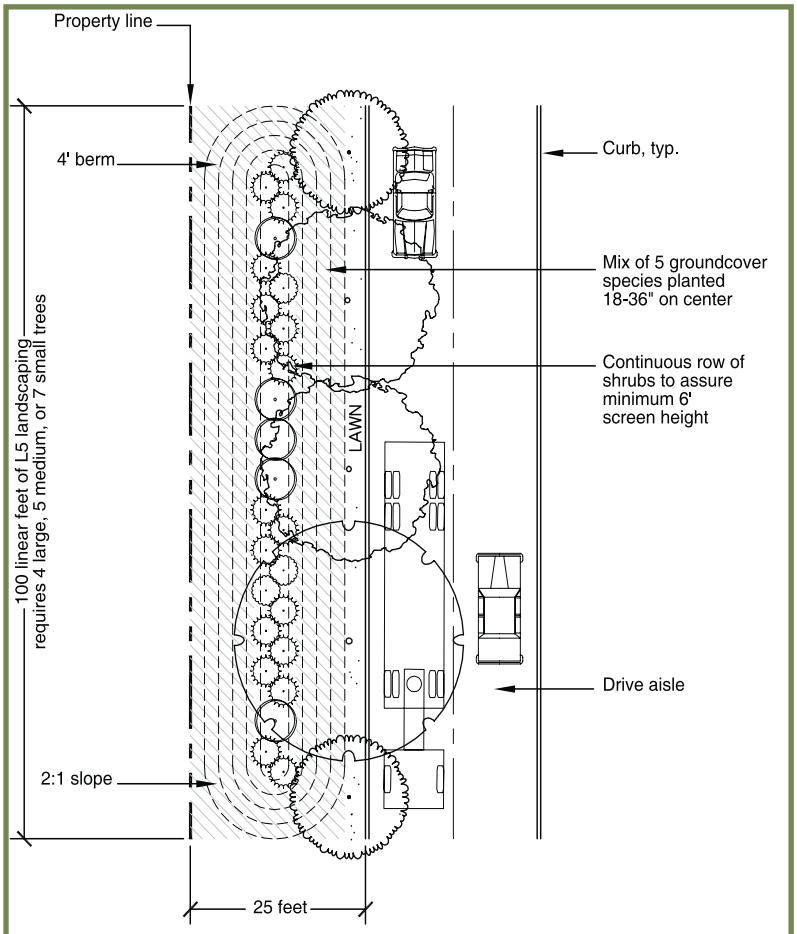
Ground cover plants

- Ground cover plants other than grasses must be at least the 4 inch pot size at planting.
- Ground cover plants must be planted at a density that will cover the entire area within three years.
- Ground cover plants other than grass seed or sod must be planted in triangular spacing at distances appropriate for the plant species.

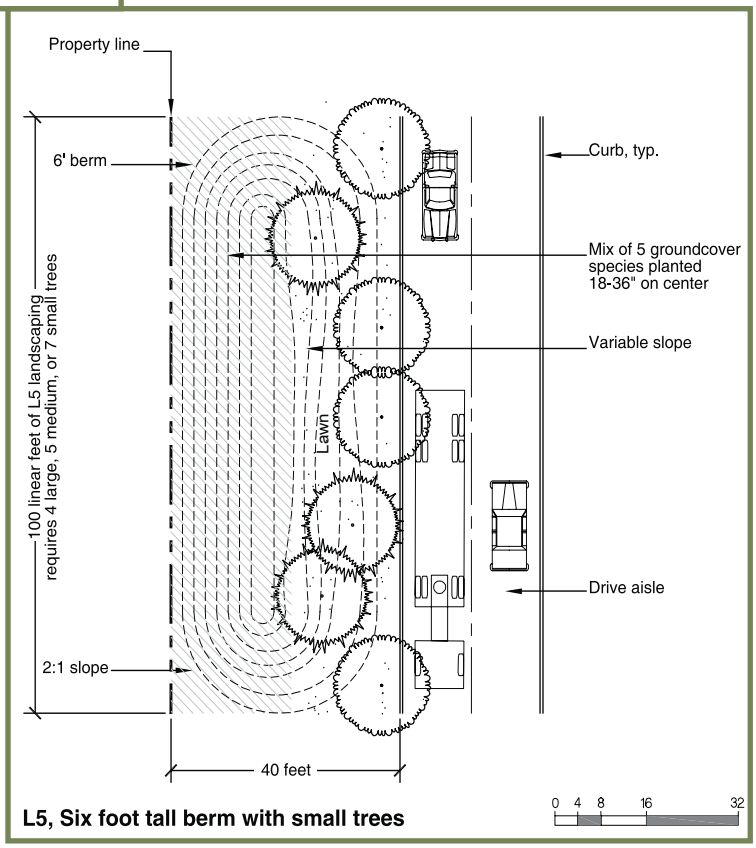
Stormwater management requirements are found in the *Stormwater Management Manual*, which is administered by the Bureau of Environmental Services. Erosion control best management practices are found in the *Erosion Control Manual*.



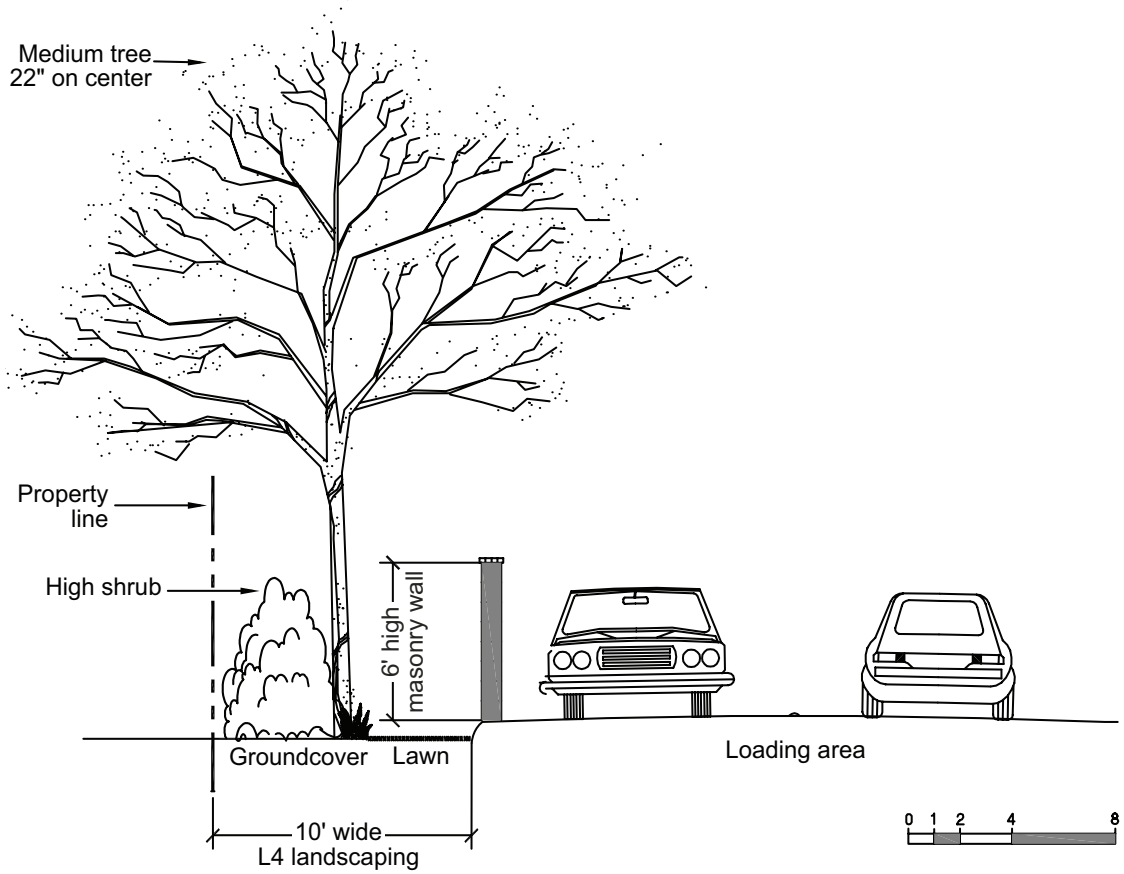
L4, High wall using mixed tree sizes



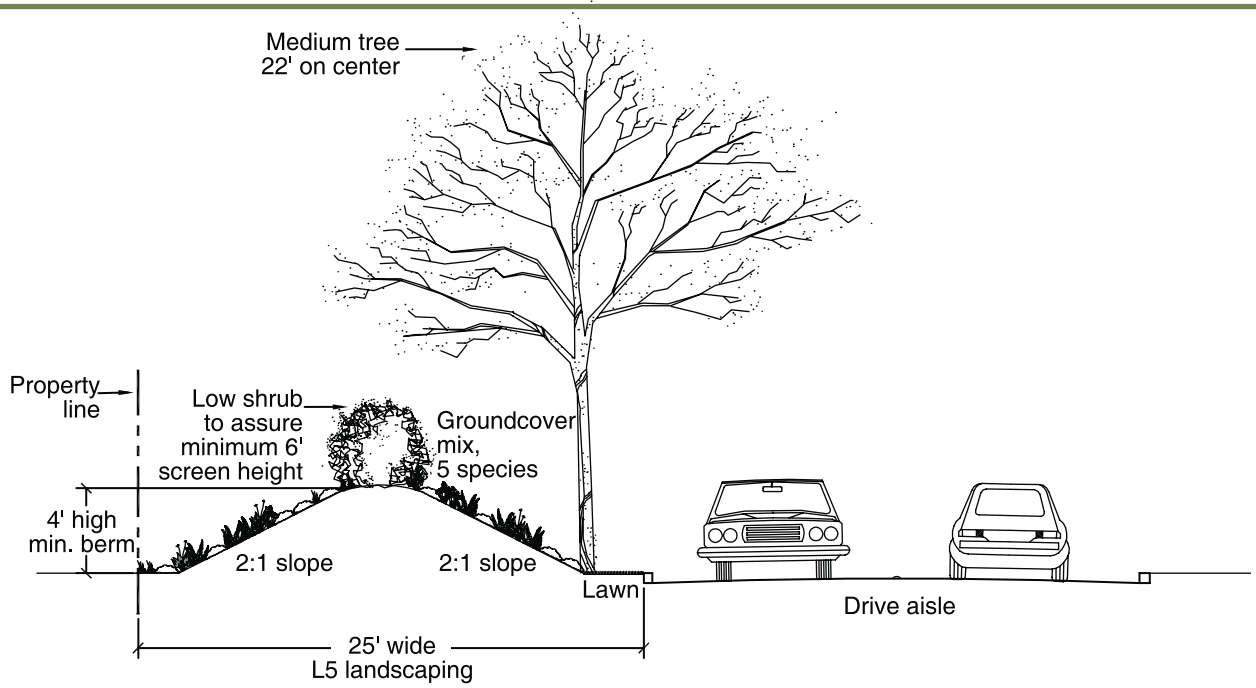
L5, Four foot tall berm with mixed tree sizes and low screen shrubs



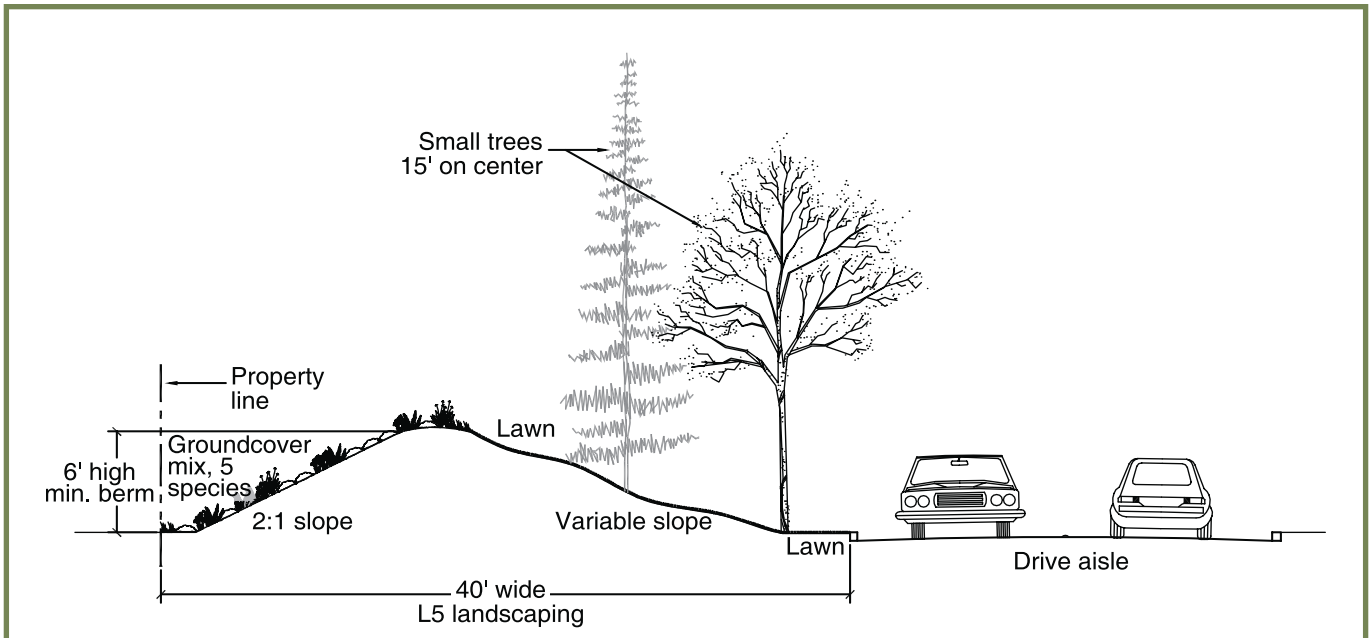
L5, Six foot tall berm with small trees



L4, High wall example, the wall is on the interior side of the landscaped area



L5, Four foot tall berm with low screen shrubs



L5, Six foot tall berm

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Standard P1, Parking Lot Interior Landscaping.

Intent and description

The P1 standard is intended to soften the aesthetic impact of parking areas while providing shade and stormwater management benefits. It is used in the interior of parking lots.

Planting & Layout

Layout

- Plants, including trees, must be protected from damage from vehicles. Bollards, curbs or other measures may be used.
- The Zoning Code requires 45 square feet of interior landscaping for each parking stall, on sites that contain more than 10 parking spaces.

Required Trees and Other Plants

- One large tree is required per four parking stalls, or one medium tree per three stalls, or one small tree per two stalls.
- Tree sizes may be mixed to match the total number of parking stalls.
- One and one half shrubs are required for every stall – resulting fractions must be rounded up.
- The remainder of the area must be planted in ground cover plants. The plants must be spaced to cover the area within 3 years.
- The front two feet of a parking space may be landscaped with ground cover plants only, and this area can count toward the interior landscaped area requirement. For each parking space where this option is used, only one shrub is required.
- Mulch does not count as ground cover.

Plant Selection

- Plants may be selected from the *Suggested Plant Lists for Required Landscaping, included in the Trees and Landscaping Manual* or from other sources, such as the *Stormwater Management Manual*, or the *Portland Plant List*.
- If plants not on the *Suggested Plant Lists for Required Landscaping* are proposed, the size, hardiness, and spacing characteristics must be documented.
- Documentation may be from published sources (e.g. the Sunset Western Garden Book), or from information provided by nurseries, such as "cut sheets."
- Plants on the Nuisance and Prohibited Plant Lists are prohibited in landscaping required by the Zoning Code.

Plant Diversity Requirements

- If there are more than eight required trees, no more than 40 percent of them can be of one species.
- If there are more than 24 required trees, no more than 24 percent of them can be of one species.
- If there are more than 25 required shrubs, no more than 75 percent of them can be of one species.

Trees

- Trees may be broadleaf or conifers, and must be fully branched at the time of planting.
- Broadleaf trees must be at least 1.5 inches in diameter at the time of planting.
- Conifer trees at the time of planting must be at least 5 feet tall.

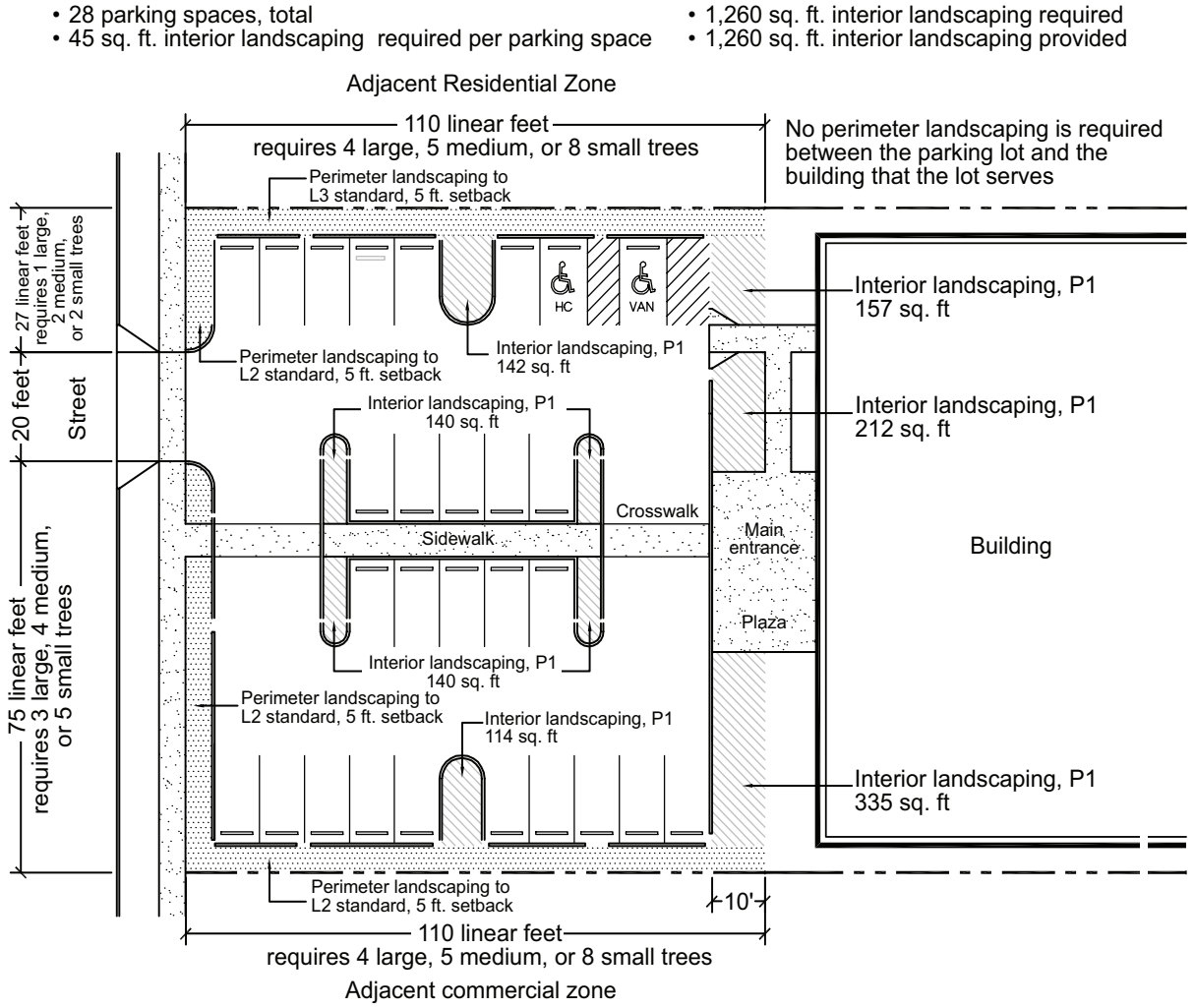
Shrubs

- Shrubs must be at least the one gallon size at the time of planting.
- Shrubs must be of sufficient size and number to meet the standards within 3 years of planting.

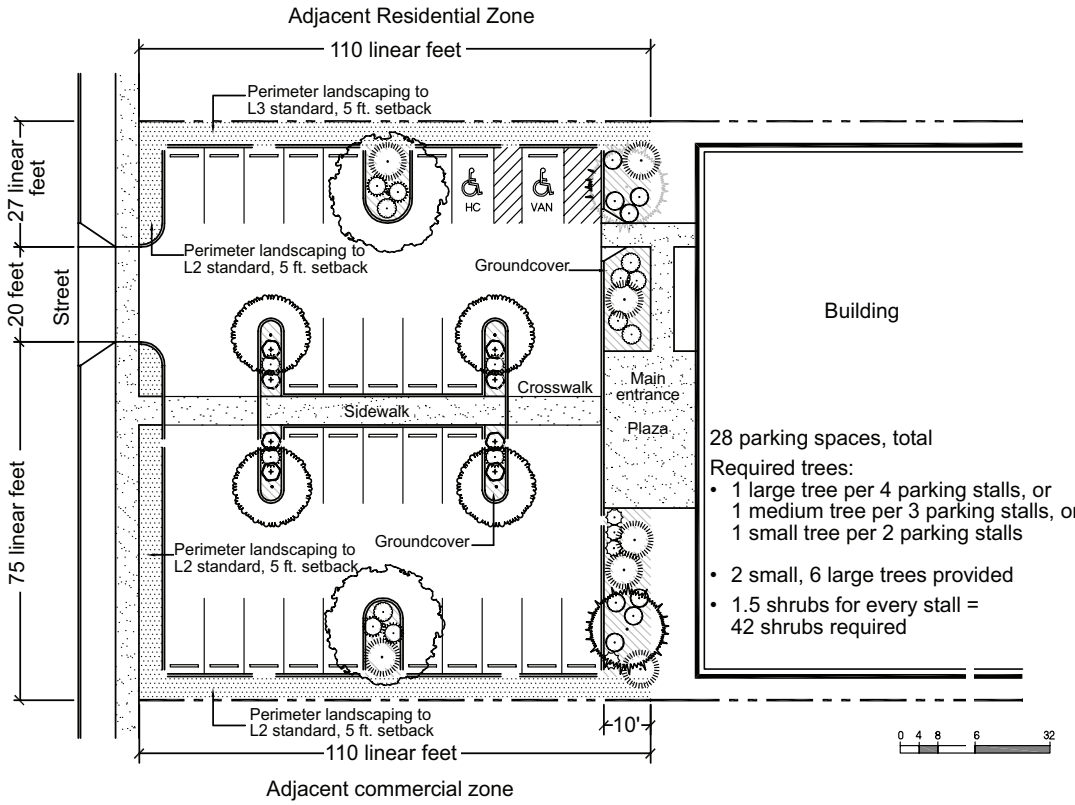
Ground cover plants

- Ground cover plants other than grasses must be at least the 4 inch pot size at planting.
- Ground cover plants must be planted at a density that will cover the entire area within three years.
- Ground cover plants other than grass seed or sod must be planted in triangular spacing at distances appropriate for the plant species.

Stormwater management requirements are found in the *Stormwater Management Manual*, which is administered by the Bureau of Environmental Services. Erosion control best management practices are found in the *Erosion Control Manual*.



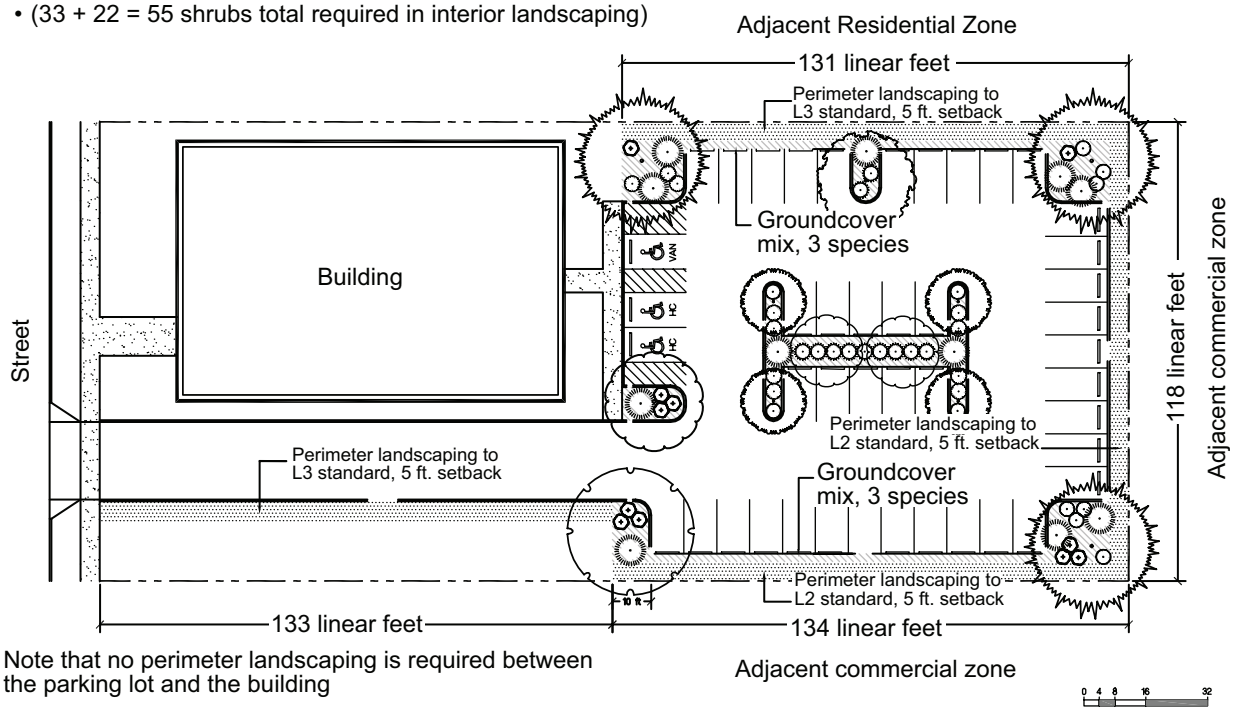
P1, Parking lot showing both perimeter and interior landscaping areas and amounts



P1, Parking lot illustrating the required interior landscaping using a mixture of small and large trees. Perimeter trees are not illustrated.

44 parking spaces, total

Required trees
- 1 large tree per 4 parking stalls, or
- 1 medium tree per 3 parking stalls, or
- 1 small tree per 2 parking stalls
- 11 large or 10 large and 2 small trees provided
- 22 parking stalls - regular P1 shrub standards (1.5 shrubs for every stall = 33 shrubs required)
- 22 parking stalls - alternate P1 shrub standards where 2' of interior landscaping abuts perimeter landscaping (1 shrub per every stall = 22 shrubs required)
- (33 + 22 = 55 shrubs total required in interior landscaping)



Note that no perimeter landscaping is required between the parking lot and the building

P1, Parking lot showing interior and perimeter landscaping using a mixture of tree sizes and both L2 and L3 perimeter landscaping. Perimeter trees are not illustrated.

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Standard T1, Trees

- The location of water, sewer, and other utility easements;

Maintenance, irrigation, protection, etc

Intent

Required landscaping must be kept alive and healthy to continue to meet the requirements of the Zoning Code and this manual.

Landscape Plans

Landscape plans must be submitted showing all landscaped areas. Plans must be drawn to scale and show type, size, number, and placement of materials. Materials must be identified with both their scientific and common names. Any required irrigation system must also be shown.

Installation

All required landscaping must be in-ground, except for certain stormwater management planters. Plant materials must be installed to current nursery industry standards and properly supported to ensure survival. Support devices such as guy wires or stakes must not interfere with vehicle or pedestrian movement.

Maintenance

- Maintenance of landscaped areas is the ongoing responsibility of the property owner.
- Required landscaping must be continuously maintained in a healthy manner.
- Plants that die must be replaced in kind.
- A fine may be levied if the landscaping has not been maintained, and new plants required to be planted.

Irrigation

All landscaped areas must provide irrigation using one of the three following options:

a. A permanent built-in irrigation system with an automatic controller.

b. A temporary irrigation system designed and certified by a licensed landscape architect. The system must provide water sufficient to ensure that the plants will become established, and may be removed when the plants will sustain themselves.

c. Irrigation by hand. This method requires that the landscaping be inspected one year after installation to ensure that the landscaping has become established. An inspection fee will be required.

Protection

All required landscaped areas must be protected from potential damage by adjacent uses and development, including parking and storage areas. Bollards, curbs or other measures may be used.

Tree Protection Specifications 11.60.030

A. **Intent.** Tree protection during development helps to reduce the negative impacts of construction. The tree protection regulations keep the foliage crown, branch structure and trunk clear from direct contact and injury by equipment, materials or disturbances; preserve roots and soil in an intact and non-compacted state; and visibly identify the root protection zone in which no soil disturbance is permitted and other activities are restricted. Maintaining these protections through development will lessen undesirable consequences that may result from uninformed or careless acts, preserve both trees and property values, and reduce risks associated with damaged or destabilized trees.

B. **Applicability.** These standards apply to any tree that is required to be retained on site or in the street during a development activity. Proposed tree protection shall meet the requirements of Subsection C., below, except that the City Forester may approve or require alternate protection methods for Street or City Trees.

C. **Protection methods.** The Tree Plan shall show that trees retained are adequately protected during construction using one of the methods described below:

1) Prescriptive Path

   a) A root protection zone is established as follows:

   i) For trees on the development site - a minimum of 1 foot radius (measured horizontally away from the face of the tree trunk) for each inch of tree diameter (see Subsection 11.80.020 C., Measurements):

   ii) Street Trees – the City Forester may prescribe greater or lesser protection than required for on-site trees.

   iii) Encroachments into the root protection zone are allowed provided:

      a. the area of all encroachments is less than 25% of the total root protection zone area;

      b. and no encroachment is closer than 1/2 the required radius distance (see Figure 60-1); Protection fencing consisting of a minimum 6-foot high metal chain link construction fence, secured with 8-foot metal posts shall be established at the edge of the root protection zone and permissible encroachment area;

      c. Signage designating the protection zone and penalties for violations shall be secured in a prominent location on each protection fence;

      d. The following is prohibited within the root protection zone of each tree or outside the limits of the development impact area: ground disturbance or construction activity including vehicle or equipment access (but excluding access on existing streets or driveways), storage of equipment or materials including soil, temporary or permanent stockpiling, proposed buildings, impervious surfaces, underground utilities, excavation or fill, trenching, or other work activities; and

      e. The fence shall be installed before any ground disturbing activities including clearing and grading, or construction starts; and shall remain in place until final inspection

2) **Performance Path.** When the prescriptive path is not practicable, the applicant may propose alternative measures to modify the prescriptive root protection zone, provided the following standards are met:

   a) The alternative root protection zone is prepared by an arborist who has visited the site and examined the specific tree's size, location, and extent of root cover, evaluated the tree's tolerance to construction impact based on its species and health, and identified any past impacts that have occurred within the root zone;

   b) The arborist has prepared a plan providing the rationale used to demonstrate that the alternate method provides an adequate level of protection based on the findings from the site visit described above:

   c) The protection zone shall be marked with signage, stating that penalties will apply for violations, and providing contact information for the arborist;

   d) If the alternative methods require the arborist be on site during construction activity, the applicant shall submit a copy of the contract for those services prior to permit issuance and a final report from the arborist documenting the inspections and verifying the viability of the trees prior to the City's final inspection;

   e) If the alternative tree protection method involves alternative construction techniques, an explanation of the techniques and materials used shall be submitted;

   f) The arborist shall sign the tree preservation and protection plan and include contact information.

The BDS Director may require the proposed tree protection method to be peer reviewed for adequacy; reject the proposal if deemed insufficient to meet Subsection C.2.b, above; or require a performance guarantee per Section 11.10.060 in order to ensure the protection methods are properly implemented.

3) **Additional information.** The City may request additional information regarding the proposed development, including construction management approaches, if the proposed development and tree protection appear to conflict. The purpose of this provision is to ensure that logistical considerations are adequately addressed in order to prevent the need for changes to the tree protection measures during the construction process.

D. **Changes to tree protection.** Changes to the tree protection measures during the course of the development may be approved as a revision to a permit provided that the change is not the result of an unauthorized encroachment into a root protection zone, and the applicant demonstrates that the tree protection standards of this Section continue to be met. When an unauthorized encroachment has occurred, the city may pursue an enforcement action or other remedy per Chapter 11.70.

E. **Tree protection inspections.** The City Forester or BDS Director may conduct inspections during the course of project activity to determine compliance with this Title and confirm that tree protection zones are being maintained and root protection methods are effective. No person may refuse entry or access to a permitted development site to any authorized representative of the City who provides proper credentials and requests entry for the purpose of conducting a Tree Protection inspection. In addition, no person may obstruct, hamper or interfere with any such representative while in the process of carrying out their official duties.

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Plant Materials and the Suggested Plant Lists

General

Portland maintains several Plant Lists:

- ***Suggested Plant Lists for Required Landscaping*** are part of the Tree and Landscaping Manual, and apply to landscaping required by the Zoning Code.
- ***Portland Plant Lists*** are primarily lists of plants native to Portland, but also include the Nuisance and Prohibited Plant Lists. These lists were first developed for use in the city's Environmental Zones.
- ***Street Tree Lists*** are maintained by the Urban Forester, and apply to trees planted in the right-of-way. The Zoning Code generally does not apply to the right-of-way.
- Stormwater Management Manual, maintained by the Bureau of Environmental Services.

For required landscaping, you may use any plants not on the Nuisance and Prohibited Plants listed in the Portland Plant List.

The *Suggested Plant Lists for Required Landscaping* are intended to assist you in selecting plant materials, but you do not have to limit yourself to plants on the lists. If you select plants that are not on the *Suggested Plant Lists for Required Landscaping*, you must provide the Bureau of Development Services with the necessary growth and spacing characteristics. The characteristics must come from objective sources, such as books, manuals, or cut sheets (printed nursery information).

Ground Cover Plants

- Ground cover plants must be planted to fill in the area within 3 years. Grasses can count as ground cover plants.
- Mulch is not a substitute for ground cover plants. Mulch must be confined to areas underneath plants.
- Ground cover plants, except turf grasses, must be at least four-inch pot size when planted.
- The ground cover plant lists include plant-spacing specifications for calculating how many plants are required.

Shrubs

- Shrubs must be planted to meet the height and screening requirements within 3 years.
- Shrubs must at least the 1-gallon size at planting.
- The shrub lists include spacing recommendations.

Trees

- Trees may be broadleaf or coniferous, but must follow any plant diversity requirements.
- Broadleaf trees at the time of planting must be fully branched.
- Broadleaf trees planted must be a minimum of 1.5 inches in diameter.
- Conifer trees at the time of planting must be fully branched and a minimum of 5 feet in height.
- These minimum requirements do not apply to trees used for mitigation, remediation, or restoration.

Tree sizes

Trees are categorized as large, medium or small based on their height and crown spread at maturity and on their growth rate. Many trees have already been categorized in the Suggested Plant List included as a part of the Landscaping Manual.

If you want to use a tree that is not already on the list, give the Bureau of Development Services (BDS) information about the tree's growth rate, mature height and mature crown spread. Objective information may come from published sources, Internet Web sites or from the nursery providing the tree like cut sheets. You must also tell BDS where you got the information.

Trees sizes are determined according to the *Canopy Factor*, which is calculated using the following formula:

(mature height in feet) x (mature crown spread in feet) x (growth rate number) x 0.01 = *Canopy Factor*

The growth rate number is **1** for slow growing trees, **2** for moderately growing trees, and **3** for fast growing trees.

The *Canopy Factor is*
greater than 90 = large trees
from 40 to 90 = medium trees
less than 40 = small trees

BDS will update the Suggested Plant List from time to time to include additional trees and plants.

Other Rules

Existing vegetation

You may use existing landscaping or natural vegetation to meet the standards if you protect and maintain it during construction as specified in Zoning Code Section 33.248.030.D.1, and if the plants are not listed in the Nuisance Plants List.

Existing trees may be used to meet landscape requirements if they are protected and maintained during construction. Each existing tree 1.5 up to 6 inches in diameter counts as one small tree. Each existing tree 6 or more inches in diameter counts as 1 medium tree for each full 6 inch increment. For example, a 19-inch tree would count as three medium trees, while an 11-inch tree would count as one medium tree.

Selection of materials

Select and locate your landscape materials to produce a hardy and drought-resistant landscape area. Consider soil type and depth, the amount of maintenance required, spacing, exposure to sun and wind, the slope and contours of the site, and compatibility with existing native vegetation preserved on the site. Arborescent shrubs from the Portland Plant List may not be used to meet the tree requirement.

Prohibited materials

Plants listed as nuisance or prohibited in the Portland Plant Lists are prohibited in required landscaped areas. Prohibited plants include plants identified by the Director of the Bureau of Development Services or the City Forester as potentially damaging to sidewalks, roads, underground utilities, drainage improvements, foundations, etc.

Exceeding standards

You may plant landscaping materials that exceed the standards so long as all fence or vegetation height limitations are met, including the vision clearance standards of Title 16, Vehicles and Traffic.

Complying with the standards

It is the applicant's responsibility to show that the landscaping materials proposed will comply with the standards.

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Suggested plant lists

These are lists of suggested plants for use in required landscaping. The listed species are not required, and individual plants listed are not suitable for all uses. Successful plantings depend on planting the appropriate plant for the site and providing water and care adequate for the plants to survive and thrive.

No single plant is best for all situations. Evaluate the conditions at your site as well as the uses that will exist after you complete your development before selecting your plant materials. Consider the amount of light and heat, if people will walk across your planted area (and ways to prevent it), whether the landscaping will receive runoff from roofs or paving, the possibility that low hanging branches or dropped fruit will interfere with pedestrians or cars, and so on.

It is your responsibility to ensure that the plants survive. The most common problem is a lack of water in the first one to three summers. Plants that die must be replaced.

Q What are the Suggested Plant Lists for Required Landscaping for?

A The *Suggested Plant Lists for Required Landscaping* are meant to provide information about plants for general use, and to make it easier for applicants to select plants. They also help staff to conduct plan reviews and inspections.

Q What is the Portland Plant List?

A The Portland Plant List is separate from the *Suggested Plant Lists for Required Landscaping* and the Tree and Landscaping Manual. It lists plants native to Portland, and includes Nuisance and Prohibited Plant Lists. Using native plants from the Portland Plant List is encouraged wherever conditions are suitable.

Q Do I have to use native plants?

A Native plants are required only in environmental zones, but they are recommended for use throughout the City. Native plants are suited to Portland's climate and soil, and they require less watering, fertilizer and pesticide. Native plants also provide habitat for native wildlife.

Q How can I use the Suggested Plant Lists?

A First identify the characteristics of your site, then select plants that match those characteristics. For example, if you have a planter 4 feet wide, you do not want to plant a tree that requires an 8-foot wide planter. Also, many parking lots have a lot of reflected heat in the summer, so in a parking lot you will probably want to use a drought-tolerant plant that tolerates full sun.

Q What if I want to use a plant that is not on the lists?

A You must include information about the plant size and spacing requirements when you submit your plans. The information may come from a commonly available reference, such as the *Sunset Western Garden Book*, or the *Manual of Woody Landscape Plants* by M. A. Dirr, from a Web site or from a nursery, wherever it comes from, you must indicate the source of the information. It is your responsibility to demonstrate that the Zoning Code's planting and spacing requirements will be met.

You may propose to use any plant that is not on the Portland Nuisance and Prohibited Plant Lists.

Q If I use a tree that is not on the list, how do I know what size it is?

A Trees are categorized by size according to the *Canopy Factor*, which is calculated using the following formula: (mature height in feet) x (mature crown spread in feet) x (growth rate number) x 0.01 = *Canopy Factor*

The growth rate number equals **1** for slow growing trees, **2** for moderately growing trees, and **3** for fast growing trees. The *Canopy Factor* for large trees is greater than 90, for medium trees is from 40 to 90, and for small trees is less than 40.

To find out how big trees will become at maturity, check printed sources or the Internet.

Q How are the lists organized?

A There are four lists: the Tree List, the High Screen Shrub List, the Low Screen Shrub List, and the Ground Cover List. Plant characteristics, such as height, spread, spacing, drought tolerance and so on, are provided to help you select appropriate plants.

Suggested Plant Lists for Required Landscaping

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Trees

Explanation of column headings for trees:

- **Min Planter Width:** The minimum recommended planter width for the tree to be healthy.
- **Height:** The maximum observed height of this species in the Portland area.
- **Spread:** The maximum observed spread of this species in the Portland area.
- **Growth Rate:** The rate observed in the Portland area.
- **Native:** Identifies plants on the Portland Native Plant list (PDX), native to the Willamette Valley (WV) or native elsewhere in Oregon (OR).
- **Drought Tolerant:** Identifies trees noted for adaptablility to drought and dry conditions.
- **Canopy Factor Number:** This is the canopy factor calculated by the Bureau of Development Services (BDS) using the formula described in the Tree and Landscaping Manual.

Botanical Name **COMMON NAME**	Min Planter Width	Height	Spread	Growth Rate	Native	Drought Tolerant	Canopy Factor Number	Remarks
LARGE TREES								
Albizia julibrissin SILK TREE, MIMOSA TREE	4′	50′	70′	3		Yes	105	Deciduous broadleaf, pink pincushion flowers.
Alnus glutinosa BLACK ALDER	4′	75′	50′	3			113	Deciduous broadleaf, tolerates moist or wet soils.
Alnus rhombifolia WHITE ALDER	4′	100′	50′	3	WV		150	Deciduous broadleaf, more tolerant of heat or drought than *A. rubra* (Red Alder).
Catalpa speciosa NORTHERN CATALPA	4′	90′	70′	2			126	Deciduous broadleaf, adaptable to wet or dry conditions, tolerates heat.
Cedrus atlantica (also C. libani ssp 'atlantica') ATLAS CEDAR	4′	100′	80′	2			160	Evergreen conifer.
Cedrus deodara DEODAR CEDAR	4′	70′	75′	2			105	Evergreen conifer, prefers drier soils than *C. atlantica*.
Celtis occidentalis COMMON HACKBERRY	4′	100′	70′	2		Yes	140	Deciduous broadleaf, drought tolerant, does not lift pavement.
Cladrastis kentukea AMERICAN YELLOWWOOD	6′	75′	70′	2			105	Deciduous broadleaf, fragrant summer blooms, prune in summer.
Cupressocyparis leylandii LEYLAND CYPRESS	4′	70′	60′	3			126	Evergreen conifer.
Fagus sylvatica EUROPEAN BEECH	8′	80′	100′	2			160	Deciduous broadleaf, needs moderate water, lowest branches brush close to ground and may need pruning, can suppress lawn growth under older trees.

Botanical Name **COMMON NAME**	**Min Planter Width**	**Height**	**Spread**	**Growth Rate**	**Native**	**Drought Tolerant**	**Canopy Factor Number**	**Remarks**
LARGE TREES								
Fraxinus angustifolia NARROWLEAF ASH	4′	70′	70′	2			98	Deciduous broadleaf.
Fraxinus excelsior EUROPEAN ASH	4′	70′	70′	2			98	Deciduous broadleaf.
Fraxinus pennsylvanica ‘Cimmaron,’ ‘Marshall,’ ‘Urbanite’ GREEN ASH	4′	100′	100′	2			200	Deciduous broadleaf ‘Marshall’ is not as large, but still grows up to 75′ tall.
Liquidambar styraciflua SWEET GUM	8′	90′	60′	3			162	Deciduous broadleaf, tolerates damp soil, needs room for root development, prone to lifting pavement. Cultivar ‘Rotundiloba’ reduces fruit drop.
Liriodendron tulipifera TULIP TREE	8′	100′	80	3			240	Deciduous broadleaf, needs room for root development, prefers summer watering.
Pinus nigra AUSTRIAN PINE	4′	100′	50′	2			100	Evergreen conifer.
Platanus acerifolia ‘Yarwood’, ‘Bloodgood’, x hispanica, ‘Columbia’ LONDON PLANE TREE	4′	80′	95′	3		Mod	231	Deciduous broadleaf, these varieties resistant to anthracnose; tolerate reflected heat, dust, soot, and smog. Other varieties more subject to red spider mites, powdery mildew, and anthracnose.
Pseudotsuga menziesii DOUGLAS FIR	8′	240′	60′	2	PDX	Yes	288	Evergreen conifer, can grow very tall given time, tends to drop needles and cones year-round, prune lower branches for clearance, older trees drop large branches.
Quercus alba WHITE OAK	4′	100′	100′	1			100	Deciduous broadleaf, does best in slightly acid, well-drained soils.
Quercus coccinea OAK, SCARLET	4′	100′	75′	2		Yes	150	Deciduous broadleaf, fall color, drought tolerant.
Quercus garryana OREGON WHITE OAK	8′	100′	100′	1	PDX	Yes	100	Deciduous broadleaf, drought tolerant.
Quercus imbricaria SHINGLE OAK	4′	80′	80′	2			128	Deciduous broadleaf, pest resistant.
Quercus keloggii CALIFORNIA BLACK OAK	4′	80′	80′	2	WV	Yes	128	Deciduous broadleaf, drought tolerant, good fall color, can be host to Sudden Oak Death.
Quercus lobata VALLEY OAK, or CALIFORNIA WHITE OAK	4′	100′	100′	3		Yes	375	Deciduous broadleaf, California native, drought tolerant.
Quercus macrocarpa BUR OAK	4′	90′	90′	2			160	Deciduous broadleaf, litters large acorns.

Botanical Name COMMON NAME	Min Planter Width	Height	Spread	Growth Rate	Native	Drought Tolerant	Canopy Factor Number	Remarks
LARGE TREES								
Quercus nigra WATER OAK	4′	100′	100′	3			300	Deciduous broadleaf, tolerates wet conditions, has weak wood.
Quercus phellos WILLOW OAK	4′	90′	100′	2			180	Deciduous broadleaf, slender form when young, more rounded with time.
Quercus robur ENGLISH OAK	4′	80′	80′	2			128	Deciduous broadleaf, litters, short-lived, can be invasive. Variety 'Fastigiata' is less spreading, but has Canopy Factor # of 100.
Quercus rubra RED OAK	4′	100′	100′	3			300	Deciduous broadleaf, needs summer water, can become very large over time, can be host to Sudden Oak Death.
Quercus shumardii SHUMARD RED OAK	4′	150′	90′	2		Yes	270	Deciduous broadleaf, more drought tolerant than other red oaks, tolerates poorly drained soil.
Quercus velutina BLACK OAK	4′	75′	115′	3			258	Deciduous broadleaf, faster growth with summer irrigation, tolerates wide range of soil types.
Quercus virginiana SOUTHERN LIVE OAK	4′	60′	100′	3			180	Evergreen broadleaf, tolerates moisture.
Quercus wislizenii INTERIOR LIVE OAK	4′	70′	70′	2		Yes	98	Evergreen broadleaf, western native, drought tolerant.
Sequoia sempervirens COAST REDWOOD	12′	100′	50	3			150	Evergreen conifer, grows tall, prefers to be watered in summer, not best for hot, dry sites, can be a host to Sudden Oak Death.
Sequoiadendron giganteum GIANT SEQUOIA	16′	115′	55′	3		Yes	189	Evergreen conifer, trunk quickly becomes massive, needs ample space.
Taxodium distichum BALD CYPRESS	8′	100′	60′	2			120	Deciduous conifer, tolerates wet conditions or dry conditions, prefers summer irrigation.
Thuja plicata WESTERN RED CEDAR	8′	150′	70′	1	PDX		105	Evergreen conifer, prefers moist conditions and shade until established, then drought tolerant. Characteristic form lost if low-hanging branches are pruned.

Botanical Name **COMMON NAME**	**Min Planter Width**	**Height**	**Spread**	**Growth Rate**	**Native**	**Drought Tolerant**	**Canopy Factor Number**	**Remarks**
LARGE TREES								
Tilia americana LINDEN, AMERICAN, or AMERICAN BASSWOOD	4′	100′	75′	2			150	Deciduous broadleaf, deep rich soil, plenty of water, prone to aphids, which cause it to drip honeydew and develop sooty mold. 'Redmond' is a useful cultivar, but this tree is not a good choice for parking lots.
Tsuga heterophylla WESTERN HEMLOCK	4′	150′	70′	2			210	Evergreen conifer, prefers moist or seasonally wet soils.
Umbellularia californica OREGON MYRTLE, CALIFORNIA LAUREL, CALIFORNIA BAY	4′	75′	75′	2	OR	Yes	112	Evergreen broadleaf, drought tolerant, best in deep soil, can be host for Sudden Oak Death.
Zelkova serrata 'Green Vase' ZELKOVA	8′	85′	75	3		Yes	192	Deciduous broadleaf, prune when young, aggressive roots.
MEDIUM TREES								
Abies concolor WHITE FIR	4′	100′	40′	1		Yes	40	Evergreen conifer.
Abies grandis GRAND FIR	8′	150′	40′	1	PDX		60	Evergreen conifer, can grow very tall, can get aphids, can be a host for Sudden Oak Death.
Acer x freemanii 'Jefferson Red' JEFFERSON RED MAPLE	4′	60′	40′	3			60	Deciduous broadleaf.
Acer macrophyllum MAPLE, BIG LEAF	8′	75′	60′	2	PDX		90	Deciduous broadleaf, plant from containerized stock, roots lift pavement, can host Sudden Oak Death.
Acer nigrum 'Greencolumn' GREENCOLUMN MAPLE	4′	70′	30′	2			42	Deciduous broadleaf
Acer rubrum RED MAPLE	4′	70′	60′	2			84	Deciduous broadleaf 'Bowhall' is a smaller – but still medium size – cultivar, reaching 50 feet in height and 30 feet in spread.
Aesculus hippocastanum 'Baumannii' BAUMANN HORSE CHESTNUT	4′	105′	80′	2			89	Deciduous broadleaf, *Baumannii* is fruitless, other varieties drop fruit. Needs summer water. Can be host to Sudden Oak Death.
Alnus rubra RED ALDER	4′	60′	40′	3	PDX		72	Deciduous broadleaf, short-lived, needs moisture, favored by tent caterpillars. This tree tends to suffer sun scald.

Botanical Name **COMMON NAME**	Min Planter Width	Height	Spread	Growth Rate	Native	Drought Tolerant	Canopy Factor Number	Remarks
MEDIUM TREES								
Calocedrus decurrens INCENSE CEDAR	4′	100′	30′	2	OR		60	Evergreen conifer, fragrant, heat tolerant, deep watering when young will make it drought tolerant later.
Carpinus betulus, except 'Fastigiata' EUROPEAN HORNBEAM	4′	60′	70′	2			84	Deciduous broadleaf, hardy, densely pyramidal.
Celtis australis EUROPEAN HACKBERRY	4′	95′	45′	2		Yes	85	Deciduous broadleaf, mod. irrigation, drops fruit, best to buy in container, does not lift pavement.
Celtis 'Magnifica' MAGNIFICA HACKBERRY	4′	50′	40′	3			60	Deciduous broadleaf, fast growing, insect resistant.
Chamaecyparis nootkatensis 'Pendula' NOOTKA CYPRESS, ALASKA YELLOW CEDAR	6′	100′	25′	2			50	Evergreen conifer, does not tolerate high heat well, does tolerate poor soil, prefers summer water.
Fraxinus americana WHITE ASH	4′	60′	75′	2			90	Deciduous broadleaf. 'Chicago Regal' is a useful cultivar that reaches about 45 feet height and 35 feet spread. 'Skyline,' and 'Junginger' are also good cultivars.
Fraxinus angustifolia (also F. oxycarpa) RAYWOOD ASH, CLARET ASH	4′	50′	50′	3			75	Deciduous broadleaf, compact, produces no seeds, good fall color.
Fraxinus latifolia ASH, OREGON	4′	60′	40′	2	PDX	Yes	48	Deciduous broadleaf, tolerates wet conditions and summer drought.
Fraxinus nigra BLACK ASH	4′	80′	40′	2			64	Deciduous broadleaf, tolerates wet soil.
Fraxinus ornus FLOWERING ASH	4′	60′	35′	3			63	Deciduous broadleaf, fragrant late-spring flowers.
Fraxinus pennsylvanica 'Patmore' PATMORE ASH	4′	45′	35′	3			63	Deciduous broadleaf. 'Patmore' is seedless, smaller than other *F. pennsylvanica* cultivars.
Fraxinus quadrangulata BLUE ASH	4′	60′	70′	2		Yes	84	Deciduous broadleaf, drought tolerant.
Magnolia kobus KOBUS MAGNOLIA	4′	70′	60′	2			84	Deciduous broadleaf, hardy.
Metasequoia glyptostroboides DAWN REDWOOD	8′	70′	30′	3			63	Deciduous conifer, prefers moist soils, needs room for root development, trunk can become quite large.

Botanical Name **COMMON NAME**	**Min Planter Width**	**Height**	**Spread**	**Growth Rate**	**Native**	**Drought Tolerant**	**Canopy Factor Number**	**Remarks**
MEDIUM TREES								
Morus alba WHITE MULBERRY	4′	50′	60′	2		Yes	60	Deciduous broadleaf, soil adaptable, drought tolerant. Females display attractive blossoms, bear edible fruit that attracts birds, is messy and stains pavement. Males lack blossoms and fruit, require less maintenance.
Nothofagus obliqua BEECH, ROBLE	4′	70′	40′	3			84	Deciduous broadleaf
Nyssa sylvatica TUPELO, SOUR GUM	4′	75′	60′	2			90	Deciduous broadleaf, good fall color, tolerates wet conditions
Ostrya virginiana AMERICAN HOPHORNBEAM	4′	70′	60′	1		Yes	42	Deciduous broadleaf, drought tolerant, pyramidal form in youth, becomes more rounded with age.
Phellodendron amurense CORK TREE	4′	50′	35′	3		Yes	45	Deciduous broadleaf, drought tolerant, smog tolerant, tends to have spreading habit. ‘Macho’ is a useful cultivar.
Pinus monticola WESTERN WHITE PINE	8′	75′	45′	2	WV		68	Evergreen conifer, very hardy, year-round needle drop
Pinus ponderosa ssp. Valley PONDEROSA PINE, Valley subspecies	8′	85′	50′	2	PDX	Yes	86	Evergreen conifer, prefers drier conditions, but Valley subspecies is adapted to Willamette Valley climate.
Pistacia chinensis CHINESE PISTACHE	4′	70′	70′	1		Yes	49	Deciduous broadleaf, drought tolerant, fall color, young tree can be lopsided, gawky, may need pruning to shape.
Prunus cerasifera CHERRY PLUM	4′	45′	50′	2			45	Deciduous broadleaf, attractive spring blossoms
Prunus sargentii, ‘Columnaris’ or ‘Rancho’ SARGENT CHERRY	4′	45′	45′	2			41	Deciduous broadleaf, except for hardiest of oriental cherries
Prunus x yedoensis YOSHINO CHERRY	4′	40′	60′	2			48	Deciduous broadleaf, attractive spring blossoms and fall color.
Pyrus calleryana ‘Aristocrat’ CALLERY PEAR	4′	50′	30′	3			45	Deciduous broadleaf, attractive spring blossoms. ‘Aristocrat’ is a medium-size cultivar. Avoid columnar cultivars, e.g., ‘Capital,’ ‘Chanticleer.’
Quercus acutissima SAWTOOTH OAK	4′	60′	50′	3			90	Deciduous broadleaf.

Botanical Name **COMMON NAME**	**Min Planter Width**	**Height**	**Spread**	**Growth Rate**	**Native**	**Drought Tolerant**	**Canopy Factor Number**	**Remarks**
MEDIUM TREES								
Quercus bicolor SWAMP WHITE OAK	4′	60′	70′	2			84	Deciduous broadleaf, tolerates wet soil, but also thrives in well-drained soil.
Quercus frainetto 'Forest Green,' 'Schmidt' FOREST GREEN OAK	4′	50′	30′	3		Yes	45	Deciduous broadleaf, drought tolerant, drops acorns.
Quercus ilex HOLLY OAK, HOLM OAK	5′	70′	55′	2		Yes	77	Evergreen broadleaf, drought tolerant, can be host to Sudden Oak Death.
Quercus palustris PIN OAK	4′	60′	75′	2			90	Deciduous broadleaf, tolerates wet and poorly drained soils, can be damaged by alkaline soils.
Quercus suber CORK OAK	4′	45′	45′	2		Yes	41	Evergreen broadleaf, drought tolerant, attractive bark, needs good drainage. The variety 'Occidentalis' is hardy.
Sassafras albidium COMMON SASSAFRAS	4′	90′	60′	1			54	Deciduous broadleaf, fall color, tends to produce suckers, grows quickly to 20′, then slows.
Sophora japonica JAPANESE PAGODA TREE	4′	50′	75′	2		Yes	76	Deciduous broadleaf, adaptable to soil and water conditions, pest free.
Tilia cordata LINDEN, LITTLE LEAF	4′	85′	50′	2			86	Deciduous broadleaf, deep rich soil, plenty of water, prone to aphids, which cause it to drip honeydew and develop sooty mold.
Tilia x euchlora CRIMEAN LINDEN	4′	60′	50′	2			60	Deciduous broadleaf, tolerates heat, aphid free. Older trees develop low-hanging branches.
Tilia tomentosa 'Sterling' SILVER LINDEN	4′	60′	50′	3		Yes	90	Deciduous broadleaf, drought tolerant once established, aphid free.
Ulmus 'Accolade,' 'Morton Glossy' (Triumph), 'Pioneer' ELM	4′	60′	50′	3			60	Deciduous broadleaf, disease resistant, beautiful leaf, drops papery seeds. The listed cultivars are disease resistant.
Ulmus parvifolia 'Athena', 'Allee' CHINESE ELM	4′	60′	60′	2			72	Deciduous or evergreen broadleaf, excellent disease resistance, mod. irrigation, frequent pruning.

Botanical Name **COMMON NAME**	**Min Planter Width**	**Height**	**Spread**	**Growth Rate**	**Native**	**Drought Tolerant**	**Canopy Factor Number**	**Remarks**
SMALL TREES								
Acer buergerianum (also A. buergeranum) TRIDENT MAPLE	4′	40′	30′	1		Yes	12	Deciduous broadleaf, drought tolerant.
Acer campestre HEDGE MAPLE	4′	50′	30′	1			15	Deciduous broadleaf, air pollution tolerant.
Acer davidii DAVID MAPLE	4′	50′	20′	2		Yes	20	Deciduous broadleaf, somewhat drought tolerant.
Acer ginnala AMUR MAPLE	4′	30′	30′	3			27	Deciduous broadleaf, hardy and adaptable.
Acer grandidentatum BIGTOOTH MAPLE, ROCKY MOUNTAIN SUGAR MAPLE	4′	60′	40′	1		Yes	24	Deciduous broadleaf, drought tolerant, ‘Schmidt’ is a locally developed cultivar.
Acer griseum PAPERBARK MAPLE	4′	25′	20′	2			10	Deciduous broadleaf, tolerates partial shade, attractive bark and fall color.
Acer miyabei ‘Morton,’ ‘State Street’ STATE STREET MAPLE	4′	45′	35′	2			32	Deciduous broadleaf.
Acer negundo ‘Flamingo,’ ‘Sensation’ BOXELDER	4′	30′	25′	1		Yes	8	Deciduous broadleaf, very hardy, tolerates drought, wet conditions, poor soils. Subject to various diseases, hosts boxelder bugs. ‘Flamingo’ is a smaller cultivar. ‘Sensation’ is slower growing, and is all male clones. Male plants are cleaner.
Acer palmatum (except ‘Dissectum’ varieties) JAPANESE MAPLE	4′	20′	20′	1			4	Deciduous broadleaf, attractive color. Select upright forms. Good varieties include ‘Atropurpureum,’ ‘Bloodgood,’ ‘Heptalobum Osakazuki,’ ‘Oshio Beni,’ and ‘Senkaki.’
Acer pseudoplatanus ‘Atropurpureum’ WINELEAF MAPLE	4′	50′	30′	2			30	Deciduous broadleaf, somewhat sensitive to heat.
Acer rufinerve REDVEIN MAPLE	4′	60′	30′	1			18	Deciduous broadleaf, young bark is green striped, becomes gray with age. Prefers dryer soils.
Acer saccharum SUGAR MAPLE (except ‘Legacy’)	4′	60′	50′	1			30	Deciduous broadleaf, fairly drought tolerant, fall color, ‘Green Mountain’ is the most drought tolerant cultivar.

Botanical Name **COMMON NAME**	**Min Planter Width**	**Height**	**Spread**	**Growth Rate**	**Native**	**Drought Tolerant**	**Canopy Factor Number**	**Remarks**
SMALL TREES								
Aesculus flava YELLOW BUCKEYE	6′	55′	50′	1			28	Deciduous broadleaf, fruit and leaf drop can be messy, needs room to develop.
Betula jaquemontii WHITE-BARKED HIMALAYAN BIRCH	4′	75′	30′	1			23	Deciduous broadleaf.
Betula nigra RIVER BIRCH	4′	70′	50′	1			35	Deciduous broadleaf, needs summer water, resistant to birch borer.
Betula papyrifera PAPER BIRCH	4′	70′	50′	1			35	Deciduous broadleaf, does not tolerate heat.
Carpinus betulus ‘Fastigiata,’ ‘Franz Fontaine’ EUROPEAN HORNBEAM	4′	30′	10′	2			6	Deciduous broadleaf, columnar forms. Older specimens of ‘Fastigiata’ have been observed to reach 30 feet in diameter. Potential availability problems.
Carpinus caroliniana AMERICAN HORNBEAM	4′	40′	50′	1			20	Deciduous broadleaf, rounded form, hardy.
Cercidiphyllum japonicum KATSURA TREE	6′	80′	40′	1			32	Deciduous broadleaf, needs ample water to establish.
Cercis canadensis EASTERN REDBUD	4′	30′	30′	1			9	Deciduous broadleaf, trunk usually branches close to ground, spreading crown.
Cornus alternifolia PAGODA DOGWOOD	4′	40′	40′	1			16	Deciduous broadleaf, prefers acidic soils, moisture.
Cornus controversa GIANT DOGWOOD	4′	40′	40′	1			16	Deciduous broadleaf, prefers moisture.
Cornus kousa KOUSA DOGWOOD	4′	40′	40′	2			32	Deciduous broadleaf, prefers moist soil, but is moderately drought tolerant.
Cornus mas CORNELIAN CHERRY	4′	30′	30′	1			9	Deciduous broadleaf, tolerates various soil types.
Crataegus suksdorfii, BLACK HAWTHORN	4′	40′	45′	1	PDX		18	Deciduous broadleaf, tolerates wet areas. This is the only species of Hawthorn allowed in required landscaping.
Eucalyptus pauciflora ssp. niphophila, ssp. Deberzevillei SNOW GUM	4′	35′	35′	2		Yes	25	Deciduous broadleaf, drought tolerant, deep rooted.

Botanical Name **COMMON NAME**	Planter Width	Height	Spread	Growth Rate	Native	Drought Tolerant	Factor Number	Remarks
SMALL TREES								
Fagus sylvatica 'Tricolor' TRICOLOR BEECH	4′	30′	20′	1			6	Deciduous broadleaf, leaves start purple, then turn green edged with pink and white
Ginkgo biloba, GINKGO, MAIDENHAIR TREE	4′	60′	60′	1			36	Deciduous broadleaf, form varies, old trees may reach 60 feet. Use the male only; female produces messy, smelly fruit. 'Autumn Gold,' 'Shangri-La,' and 'Saratoga' are good cultivars.
Gleditsia triacanthos HONEYLOCUST	4′	40′	40′	2		Yes	32	Deciduous broadleaf, tolerates a wide range of conditions, produces a large seedpod, but seedless varieties are available.
Gymnocladus dioicus KENTUCKY COFFEE TREE	4′	50′	35′	2		Yes	36	Deciduous broadleaf, heat and drought tolerant, saplings grow very fast, then slow down. Seed pods produce litter. 'Espresso' is a seedless variety.
Koelreuteria bipinnata CHINESE FLAME TREE	4′	30′	30′	2			18	Deciduous broadleaf, adaptable to soil conditions, heat tolerant, produces some seed litter.
Koelreuteria paniculata (also *K. bipinnata*) GOLDENRAIN	4′	30′	30′	2			18	Deciduous broadleaf, mod. irrigation, yellow summer flowers, produces some seed litter; tolerates cold, heat, drought, wind, and alkaline soil. Needs watering when young.
Lagerstroemia indica x L. fauriei, 'Catawba,' 'Cherokee,' 'Pecos' CRAPE MYRTLE	4′	35′	35′	1			12	Deciduous broadleaf, full sun, summer flowers, summer water, good drainage.
Laurus nobilis SWEET BAY	4′	30′	15′	1		Yes	5	Evergreen broadleaf, needs good drainage, drought tolerant, best in filtered or afternoon shade, tends to send up suckers.
Maackia amurensis AMUR MAACKIA	4′	25′	20′	1			5	Deciduous broadleaf, adaptable to different soils, prefers sunny exposures.
Magnolia 'Elizabeth' ELIZABETH MAGNOLIA	4′	25′	25′	1			6	Deciduous broadleaf.
Magnolia grandiflora SOUTHERN MAGNOLIA	4′	40′	40′	1			16	Evergreen broadleaf, growth rate varies by cultivar, very slow without irrigation, drops leaves and petals. Good cultivars include 'DD Blanchard,' 'Edith Boge,' 'Victoria.'

Botanical Name **COMMON NAME**	**Planter Width**	**Height**	**Spread**	**Growth Rate**	**Native**	**Drought Tolerant**	**Factor Number**	**Remarks**
SMALL TREES								
Magnolia x soulangiana SAUCER MAGNOLIA	4′	40′	40′	1			16	Deciduous broadleaf.
Magnolia stellata STAR MAGNOLIA	4′	30′	20′	1			6	Deciduous broadleaf.
Malus cvs. CRABAPPLE	4′	20′	20′	2	PDX, one sp.		8	Deciduous broadleaf, adaptable to wide range of conditions, but prefers moist, acidic soil. *M. fusca*, Western Crabapple, is native to Portland.
Morus nigra BLACK MULBERRY	4′	30′	40′	1			12	Deciduous broadleaf, edible fruit. Birds attracted by fruit, fruit drop can be messy.
Nothofagus dombeyi BEECH, SOUTH AMERICAN	4′	85′	40′	1			34	Evergreen broadleaf.
Parrotia persica PERSIAN PARROTIA, PERSIAN IRONWOOD	4′	40′	30′	1			12	Deciduous broadleaf, good autumn color.
Picea pungens var. glauca COLORADO BLUE SPRUCE	4′	50′	20′	1			10	Evergreen conifer, very adaptable, more drought tolerant than other spruces.
Pinus contorta var. contorta, SHORE PINE	4′	40′	30′	1	OR		12	Evergreen conifer, needs good drainage, year-round needle drop.
Populus tremuloides QUAKING ASPEN	4′	25′	15′	1	OR		4	Deciduous broadleaf, requires regular watering. Use in stormwater facilities. Roots are invasive; avoid planting near pavement, sewer lines, or septic tanks.
Prunus ‘Amanogawa’ AMANOGAWA FLOWERING CHERRY	4′	40′	30′	2			24	Deciduous broadleaf. This tree grows in a relatively columnar form, in contrast to other flowering cherries, which are spreading.
Prunus padus BIRD CHERRY	4′	50′	50′	1			25	Deciduous broadleaf, adaptable to range of soil conditions, lovely blossoms produce fruits that attract birds.
Prunus serrulata cvs. JAPANESE FLOWERING CHERRY	4′	30′	30′	2			18	Deciduous broadleaf, lovely spring blossoms, good fall color.
Pyrus calleryana ‘Bradford’ BRADFORD CALLERY PEAR	4′	60′	60′	1			36	Deciduous broadleaf, attractive spring blossoms. ‘Bradford’ is slow growing.
Pyrus calleryana ‘Glen’s Form’ CALLERY PEAR	4′	40′	20′	3			24	Deciduous broadleaf, attractive spring blossoms. ‘Glen’s Form’ is faster growing, smaller than ‘Bradford.’

Botanical Name COMMON NAME	Planter Width	Height	Spread	Growth Rate	Native	Drought Tolerant	Factor Number	Remarks
SMALL TREES								
Quercus buckleyi TEXAS RED OAK	4′	50′	30′	2		Yes	30	Deciduous broadleaf.
Quercus chrysolepis CANYON LIVE OAK	4′	40′	90′	1	WV	Yes	36	Evergreen broadleaf, drought tolerant, can be host to Sudden Oak Death.
Rhamnus purshiana CASCARA	3′	25′	20′	2	PDX		10	Deciduous broadleaf, yellow in fall, if in full sun does best with ample water. Can host Sudden Oak Death disease.
Sorbus alnifolia KOREAN MOUNTAIN ASH	4′	40′	30′	2			24	Deciduous broadleaf, white blossoms produce orange fruits that are attractive to birds, can be messy.
Styrax japonicus JAPANESE SNOWBELL	4′	30′	30′	2			18	Deciduous broadleaf, white blossoms in spring.
Styrax obassia FRAGRANT SNOWBELL	4′	30′	20′	2			12	Deciduous broadleaf, white blossoms in spring.
Thuja plicata 'Fastigiata,' 'Hogan Cedar' WESTERN RED CEDAR	8′	50′	15′	1	PDX		8	Evergreen conifer, prefers moist conditions and shade; once established,drought tolerant. Other varieties have much wider spread, low-hanging branches.
Columnar Trees (Only the listed varieties of each species are columnar)								
Acer rubrum 'Bowhall' RED MAPLE	4′	50′	15′	2			15	Deciduous broadleaf, good fall color.
Acer saccharum 'Newton Sentry' SUGAR MAPLE	4′	50′	15′	2			15	Deciduous broadleaf, good fall color.
Carpinus betulus 'Franz Fontaine' EUROPEAN HORNBEAM	4′	30′	10′	2			6	Deciduous broadleaf, hardy, soil adaptable.
Cupressus sempervirens cvs. ITALIAN CYPRESS	4′	100′	20	1		Yes	20	Evergreen conifer, hardy, drought tolerant. 'Tiny Tower' is shorter, can be a high screen shrub. 'Swanes Golden' has yellow foliage.
Fagus sylvatica 'Dawyk,' 'Dawyk Gold,' 'Dawyk purple' EUROPEAN BEECH	8′	80′	15′	2			24	Deciduous broadleaf, does not tolerate compacted soil.
Ginkgo biloba ' Princeton Sentry' GINKGO, MAIDENHAIR TREE	4′	60′	15′	1			9	Deciduous broadleaf, hardy, good fall color.
Prunus sargentii 'Columnaris' or 'Rancho' SARGENT CHERRY	4′	25	10	2			5	Deciduous broadleaf, these are two columnar cultivars.
Quercus 'Crimson Spire' CRIMSON SPIRE OAK	4′	45′	15	2			13	Deciduous broadleaf.
Quercus rober 'Fastigiata' ENGLISH OAK	4′	50′	20′	2			20	Deciduous broadleaf.

SHRUBS

Explanation of column headings for shrubs:

- **Height:** Approximate maximum height.
- **Spacing:** Optimum spacing when shrubs are not used for screening. For screening, shrubs need to be planted closer together.
- **Evergreen/Deciduous:** Indicated by E or D.
- **Native:** Identifies plants on the Portland Native Plant List (PDX), native to the Willamette Valley (WV), or native elsewhere in Oregon (OR).
- **Drought Tolerant:** Yes identifies plants that are well adapted to dry conditions and periods of drought.
- **Sun or Shade:** FSun = full sun, Sun = sun, PtSun = part sun Shd = shade, FShd = full shade, PtShd = part shade. NOTE: Where the Zoning Code requires screening, shrubs may need to be planted closer than suggested in the "Spacing" column. In such cases, follow the requirements of the code, rather than the suggested spacing in this table.

Botanical Name **COMMON NAME**	**Height**	**Spacing**	**Evergreen/ Deciduous**	**Native**	**Drought Tolerant**	**Sun or Shade**	**Remarks**
HIGH SCREEN SHRUBS, 6 FEET AND TALLER							
Abelia 'Edward Goucher' ABELIA	6′	6′	E		Yes	FSun/ PtShd	Best in full sun, often grown as hedge.
Acer circinatum VINE MAPLE	8-10′	6′+	D	PDX	Yes	FShd/ PtSun	Prefers shade and moisture.
Amelanchier alnifolia 'Regent' SERVICEBERRY	6′	5′	D	OR	Yes	FSun/ PtShd	'Regent' is compact shrub. Other varieties can be larger.
Arbutus unedo STRAWBERRY TREE	8-10′+	6′	E			Sun	'Compacta' is a compact variety.
Arctostaphyllos columbiana MANZANITA	6-7′	6′	E	PDX	Yes	FSun	
Arctostaphyllos hookeri MANZANITA	6′	5′	E	PDX	Yes	FSun	West coast native.
Aronia arbutifolia 'Brilliant' BRILLIANT RED CHOKEBERRY	10′	5′	D		Yes	FSun/ PtShd	Good for mass plantings or hedges.
Berberis thunbergii 'Rose Glow,' Helmond Pillar' JAPANESE BARBERRY	6′	6′	D		Yes	FSun/ PtShd	'Rose Glow' spreads to 6', 'Helmond Pillar' is columnar, and spreads to about 3,' does not tolerate very moist conditions.
Buxus sempervirens 'Graham Blandy' COMMON BOXWOOD	9′	1.2′	D		Yes	FSun/ PtShd	Adaptable, often used for hedge.
Callicarpa bodinieri 'Profusion' BODINIER BEAUTYBERRY	8′	6′	D			FSun/ PtShd	Best in full sun, brilliantly colored berries.
Camellia sasanqua cvs., Camellia x williamsii cvs. CAMELLIA	6-8′	Varies	E			Sun	Fall/winter flower; potential espalier.
Carpenteria californica BUSH ANEMONE	8′	6′	E		Yes	FSun/ PtShd flowers.	Looks best in light shade, lightly fragrant summer
Chimonanthus praecox WINTERSWEET	10′	8′	D			FSun/ PtShd	Winter fragrance, late winter, early spring flowers, needs occasional summer water.
Clethra alnifolia SUMMERSWEET, SWEET PEPPERBUSH	6′	3′	D			FSun/ PtShd	Fragrant late summer flowers, grows best with some shade.

Botanical Name **COMMON NAME**	**Height**	**Spacing**	**Evergreen/ Deciduous**	**Native**	**Drought Tolerant**	**Sun or Shade**	**Remarks**
HIGH SCREEN SHRUBS, 6 FEET AND TALLER							
Cornus sericea RED OSIER DOGWOOD	6'+	6'	D	PDX		FSun/ FShd	Bright fall leaf color, red winter twigs for color.
Cupressus sempervirens ITALIAN CYPRESS	15+'	3'	E		Yes	FSun/ PtShd	May need shearing and tying to keep within limited area.
Deutzia Magicien, Deutzia x lemoinei, Deutzia scabra DEUTZIA	7'	6'	D		Yes	FSun/ PtShd	Abundant May flowers.
Elaeagnus x ebbingei cvs. EBBINGE'S SILVERBERRY	8'	8'	E		Yes	FSun/ PtShd	
Escallonia exoniensis (and other species) ESCALLONIA	6-8'	6'	E			Sun	Somewhat drought tolerant, but looks best with ample water.
Euonymus japonica 'Green Spire' JAPANESE EUONYMUS	6'	2'	E		Yes	FSun/ PtShd	Very heat tolerant, also tolerates poor soils.
Fatsia japonica JAPANESE FATSIA, JAPANESE ARALIA	7-8'	6'	E			PtSun/ FShd	
Fothergilla major 'Mt. Airy' FOTHERGILLA	6'	5'	D			FSun/ PtShd	Good fall color.
Garrya elliptica cvs. COAST SILK TASSEL	8-9'	6'	E	OR	Yes	FSun/ PtShd	Coast native.
Holodiscus discolor OCEANSPRAY	8'	6'	D	PDX	Yes	FSun/ PtShd	White flowers.
Ilex cornuta 'Berries Jubilee' CHINESE HOLLY	10'	10'	E		Yes	Sun Shade	Grows most compactly and attractively in sun.
Ilex crenata 'Sky Pencil' ('Sky Sentry') JAPANESE HOLLY	8'	1.5'	E		Yes	Sun Shade	Grows most compactly and attractively in sun.
Juniperus scopulorum 'Sky Rocket' JUNIPER	20'	2'	E		Yes	Sun Shade	
Lagerstroemia 'Zuni' ZUNI CRAPE MYRTLE	9'	8'	D		Yes	FSun/ PtShd	
Ligustrum japonicum 'Texanum' JAPANESE PRIVET, WAX LEAF PRIVET	10'	6'	E		Yes	FSun/ PtShd	Adaptable to various soils, but does not tolerate very wet conditions. Excellent hedge plant.
Loropetalum chinense var. rubrum 'Pipa's Red' LOROPETALUM	6'	6'	E		Yes	FSun/ PtShd	
Myrica californica PACIFIC WAX MYRTLE	8-10'	6'	E	OR	Yes	FSun/ PtShd	Coast native.
Nandina domestica 'Moyers Red' HEAVENLY BAMBOO, SACRED BAMBOO	6'	3'	E		Yes	FSun/	
Osmanthus delavayi DELAVAY OSMANTHUS	6'	5'	E		Yes	FSun/ PtShd	Winter flowering.

Botanical Name **COMMON NAME**	**Height**	**Spacing**	**Evergreen/ Deciduous**	**Native**	**Drought Tolerant**	**Sun or Shade**	**Remarks**
HIGH SCREEN SHRUBS, 6 FEET AND TALLER							
Osmanthus fragrans SWEET OLIVE	8'+ fast	6'	E			FSun/ PtShd	Fragrant flowers, young plants best in partial shade, tolerates sun when mature.
Osmanthus heterophyllus HOLLY-LEAVED OSMANTHUS	8'+ fast	6'	E			FSun/ PtShd	Fragrant flowers.
Philadelphus lewisii cvs MOCK ORANGE	6'	5'	D	PDX	Yes	FSun/ PtShd	
Photinia x fraseri FRASER PHOTINIA	12'	12'	E		Yes	FSun/ PtShd	Good for hedges.
Prunus ilicifolius HOLLY LEAFED CHERRY	6-8'	4-5'	E		Yes	FSun/ PtShd	West coast native, not hardy in cold winters.
Physocarpus capitatus WESTERN NINEBARK, PACIFIC NINEBARK	8'	6'	D	PDX		FSun/ PtShd	Prefers moist conditions, requires some summer water.
Physocarpus opufolius cvs. COMMON NINEBARK, EASTERN NINEBARK	10'	6'	D		Yes	FSun/ PtShd	
Rhamnus alaternus ITALIAN BUCKTHORN	8'	5'	E		Yes	FSun/ PtShd	Fast growing, tolerates drought, heat, wind.
Ribes sanguinium RED-FLOWERING CURRANT	6-8'	6'	D	PDX	Yes	FSun/ PtShd	Drought tolerant, does best with summer water.
Syringa x laciniata CUTLEAF LILAC	6'	5'	D		Yes	FSun/ PtShd	
Syringa meyeri 'Palibin' PALABIN MEYER LILAC	6'	5'	D		Yes	FSun/ PtShd	
Syringa patula 'Miss Kim' MISS KIM KOREAN LILAC, MISS KIM MANCHURIAN LILAC	6'	5'	D		Yes	FSun/ PtShd	Good fall leaf color.
Thuja occidentalis 'Smaragd' (Emerald) AMERICAN ARBORVITAE	12'	3'	E		Yes	FSun/ PtShd	Withstands excessive moisture.
Viburnum x bodnantense 'Dawn' DAWN BODNANTENSE VIBURNUM	15'	10'	D		Yes	FSun/ PtShd	Winter blossoms.
Viburnum carlesii KOREAN SPICE VIBURNUM	6-8'	6'	D			FSun/ PtShd	Fragrant snowball blossoms; loose open habit.
Viburnum 'Cayuga', 'Mohawk' VIBURNUM	6-8'	6'	D			FSun/ PtShd	Fragrant blossoms.
Viburnum cinnamomifolium CINNAMON LEAF VIBURNUM	8'	6'	E		Yes	FSun/ FShd	Small early-spring flowers
Viburnum ellipticum OREGON VIBURNUM	8'	6'	D	PDX		FSun/ PtShd	
Viburnum odoratissimum v. awabuki SWEET VIBURNUM	6-8'	6'	E			FSun/ PtShd	Glossy leaves, best with summer water. not as winter hardy as other viburnums.

Botanical Name **COMMON NAME**	**Height**	**Spacing**	**Evergreen/ Deciduous**	**Native**	**Drought Tolerant**	**Sun or Shade**	**Remarks**
HIGH SCREEN SHRUBS, 6 FEET AND TALLER							
Viburnum tinus LAURUSTINUS VIBURNUM	6-7′	5′	E		Yes	FSun/ FShd	Pink buds open to white flowers in winter and spring.
Vitex agnus-castus CHASTE TREE	4′	10′	D		Yes	FSun/ PtShd	Drought tolerant, flowers, spreading multi-trunked habit.
LOW SHRUBS, 3 to 4 FEET							
Abelia x grandiflora GLOSSY ABELIA	4′	4′	Semi E			FSun/ PtShd	Best with some shade, prefers acid, peaty soil
Berberis x gladwynensis ‘William Penn’ WILLIAM PENN BARBERRY	3′	4′	E		Yes	FSun/	
Berberis thunbergii ‘Aurea’ JAPANESE BARBERRY	4′	4′	D		Yes	FSun/ PtShd	Yellow leaves, good color accent plant.
Berberis verruculosa WARTY BARBERRY	3′	4′	E		Yes	FSun/ PtShd	Very spiny branches.
Buxus sempervirens ‘Suffruticosa’ EDGING BOXWOOD, TRUE DWARF BOXWOOD	4′	3′	E		Yes	Sun Shade	
Caryopteris x clandonensis BLUE MIST, BLUEBEARD	3′	4′	D		Yes	FSun/ PtShd	Best in full sun, very drought tolerant, abundant blue blossoms from August to frost.
Ceanothus sp. (eg, *velutinus, thyrsiflorus, integerrimus)* CALIFORNIA LILAC	4′+	5-8′	E	NW	Yes	FSun	Most species are native to California. Use cultivars tested for Portland region. Most species are short-lived (<10 years).
Choisya ternata MEXICAN TERNATE ORANGE, Also *Choisya* ‘Aztec Pearl’	3-4′	4′	E			FSun/ PtShd	Fast growing, attractive blossoms
Cistus (various species) ROCK ROSE	3-5′	3-5′	E		Yes	FSun	Showy spring flowers, hardy, drought tolerant. If in area receiving watering, needs well-drained soil.
Clethra alnifolia ‘Hummingbird SUMMERSWEET SWEET PEPPERBUSH	3′	3′	D			FSun/ PtShd	‘Hummingbird’ is smaller than other cultivars.
Corylopsis pauciflora BUTTERCUP WINTER HAZEL	4′	5′	D		Yes	PtShd	Late Winter or very early fragrant spring blossoms.
Daphne sp. DAPHNE	3-4′	3-4′	E/D		Yes	FSun/ PtShd	Winter flower, very fragrant, *D. odora* is sensitive, requires careful planting and maintenance. Other varieties are hardier.
Daphne x burkwoodii BURKWOOD DAPHNE	3′	5′	E			FSun/ PtShd	Does best with some summer water.
Daphne caucasica cvs. CAUCASIAN DAPHNE	3′	3′	E			FSun/ PtShd	

Botanical Name **COMMON NAME**	**Height**	**Spacing**	**Evergreen/ Deciduous**	**Native**	**Drought Tolerant**	**Sun or Shade**	**Remarks**
LOW SHRUBS, 3 to 4 FEET							
Daphne tangutica DAPHNE	3′	3′	E			FSun/ PtShd	
Deutzia gracilis 'Nikko' SLENDER DEUTZIA	3′	5′	D		Yes	FSun/ PtShd	D. gracilis is shorter than other species.
Exocorda x macrantha 'The Bride' PEARL BUSH	4′	4′	D			Sun	Late April blossoms
Hydrangea macrophylla 'Pia' BIG-LEAF HYDRANGEA GARDEN HYDRANGEA	3′	4′	D			Shade	Requires summer water for best performance.
Hydrangea quercifolia 'PeeWee' OAK-LEAF HYDRANGEA	4′	6′	D			FSun/ PtShd	Requires summer water for best performance.
Hydrangea serrata 'Prezosia' HYDRANGEA	4′	4′	D			FSun/ PtShd	Requires summer water for best performance.
Ilex crenata JAPANESE HOLLY	4′	4′	E			Sun Shade	Very hardy, grows best in slightly acid soil.
Ilex glabra 'Shamrock' INKBERRY	4′	4′	E		Yes	Sun Shade	
Itea virginica 'Little Henry' LITTLE HENRY SWEETSPIRE	3′	4′	D			Sun Shade	
Lavandula sp. LAVENDER	2-3′	2-3′	E		Yes	FSun	Short-lived.
Lonicera nitida BOX HONEYSUCKLE	4′	5′	E		Yes	FSun PtShd	Fragrant June blossoms.
Loropetalum chinense var. rubrum 'Suzanne' PINK-FLOWERING FRINGE FLOWER	4′	5′	Semi E			FSun PtShd	
Mahonia aquifolium TALL OREGON GRAPE	3-4′	3′	E	PDX	Yes	Sun Shade	Portland native; yellow flowers. Can reach over 6 feet high, but tolerates being cut back.
Nandina domestica 'Firepower', 'Compacta', 'Gulfstream' HEAVENLY BAMBOO, SACRED BAMBOO	3′	3′	E		Yes	FSun/ PtShd	These are shorter cultivars.
Philadelphus lewisii MOCK ORANGE	3′	3′	D	PDX	Yes	FSun/ PtShd	Portland native, fragrant flowers
Philadelphus x virginalis 'Dwarf Snowflake' VIRGINAL MOCK ORANGE	4′	4′	D			FSun PtShd	
Phygelius x rectus cvs. CAPE FUSCHIA	3′	3′	Semi E		Yes	FSun PtShd	Bright flowers from July through September
Potentilla fruticosa cvs. BUSH CINQUEFOIL	3′	3′	D		Yes	FSun PtShd	
Rhamnus californica COFFEEBERRY, smaller cvs.	3-4′	3′	E		Yes	FSun/ PtShd	Western native. Looks best with some summer water.

Botanical Name **COMMON NAME**	**Height**	**Spacing**	**Evergreen/ Deciduous**	**Native**	**Drought Tolerant**	**Sun or Shade**	**Remarks**
LOW SHRUBS, 3 to 4 FEET							
Rosa 'Carefree Delight' CAREFREE DELIGHT ROSE	4′	5′	D		Yes	FSun PtShd	Disease resistant, self-cleaning.
Rosa x odorata 'mutabilis' TWELVE-MONTH ROSE	3-4′	3′	semi E			FSun	
Rosa pisocarpa CLUSTERED ROSE	3-4′	3′	D	PDX	Yes	FSun/ PtShd	Portland native; grows near water.
Sarcococca ruscifolia, S. confusa FRAGRANT SARCOCOCCA	3-4′	3′	E			FShd/ PtSun	Winter flower / fragrant, does best with summer water. Grows well in deep shade.
Spiraea x bumalda cvs. BUMALD SPIRAEA,	3′	3′	E			FSun PtShd	Fragrant winter flower. Does best with summer water. Grows well in deep shade.
Spiraea betulifolia SHINY-LEAF SPIRAEA, WHITE SPIRAEA, BIRCHLEAF SPIREA	3′	3′	D	PDX	Yes	FSun/ PtShd	Var. *S.b. lucinda* is a Portland native.
Spiraea densiflora SPIRAEA	3′	3′	D		Yes	FSun	
Spiraea douglasii WESTERN SPIRAEA, HARDHACK	3-4′	3′	D	PDX		FSun/ PtShd	Portland native; grows near water.
Spiraea japonica cvs. JAPANESE SPIRAEA	3′	3′	D		Yes	FSun	
Spiraea nipponica NIPPON SPIRAEA	3′	3′	D		Yes	FSun	
Symphoricarpos albus SNOWBERRY	3′	3′+	D	PDX	Yes	Sun/ Shade	Portland native. Pink spring flowers, white summer berries. Fruits best in full sun.
Symphoricarpos orbiculatus CORAL BERRY, INDIAN CURRANT	3′	3′	D		Yes	Sun Shade	
Viburnum davidii DAVID VIBURNUM	3′	3′	E			Sun/ Shade	Takes full sun with good soil; does not tolerate heavy clay.
Viburnum opulus 'Nanum' DWARF EUROPEAN CRANBERRY BUSH	3′	4′	D		Yes	Sun/ Shade	Tolerates wet soil. 'Nanum' is a dwarf variety; other cvs. are taller.
Viburnum x pragense VIBURNUM	4′	4′	E			Sun/ Shade	Winter flowering. Can grow over 6 feet tall.
Viburnum propinquum VIBURNUM	3′	3′	E			Sun/ Shade	
Weigela florida 'Java Red' JAVA RED WEIGELA	4′	5′	D		Yes	FSun/ PtShd	

GROUNDCOVER

Explanation of column headings for ground cover plants:

- **Height:** Approximate maximum height.
- **Spacing:** Use this spacing figure to calculate the number of plants needed to fill the landscaped area.
- **Evergreen/Deciduous:** Indicated by E or D.
- **Native:** Identifies plants on the Portland Native Plant List (PDX), native to the Willamette Valley (WV), or native elsewhere in Oregon (OR).
- **Drought Tolerant:** Yes identifies plants that are well adapted to dry conditions and periods of drought.
- **Sun or Shade:** FSun = full sun, Sun = sun, PtSun = part sun Shd = shade, FShd = full shade, PtShd = part shade. (NOTE: To calculate the number of ground cover plants needed, use the Plant Coverage Table and the Spacing figure from this list. The Plant Coverage Table is found at the beginning of the Suggested Plant Lists.)

Botanical Name **COMMON NAME**	**Height**	**Spacing**	**Evergreen/ Deciduous**	**Native**	**Drought Tolerant**	**Sun or Shade**	**Remarks**
Ground Covers							
Arctostaphyllos nummularifolia MANZANITA	10″	1.5′	E		Yes	FSun	
Arctostaphyllos uva ursi KINNIKINICK, BEARBERRY	12″	2′	E	PDX	Yes	PtSun	Slow in starting to spread
Baccharis magillanicus SPREADING COYOTE BUSH	6″	4′	E		Yes	FSun	
Berberis (see Mahonia listings below) MAHONIA							
Bergenia cvs. BERGENIA	16″	1.5′	E		Yes	Sun Shade	Best in partial shade, Drought tolerance greatest in shade.
Ceanothus 'Blue Cushion' BLUE BUSH, CALIFORNIA LILAC	8″	3′	E		Yes	FSun	Does not tolerate summer watering once established.
Ceanothus gloriosus, cvs. CALIFORNIA LILAC	6″	4′	E	NW	Yes	FSun	Tolerates heavy soil and moderate summer water.
Ceanothus porrectus, cvs. CALIFORNIA LILAC	6″	4′	E		Yes	FSun	
Cotoneaster dammeri BEARBERRY COTONEASTER	4″	3′	E		Yes	FSun	Does best in dry conditions.
Euonymus fortunei 'Coloratus' PURPLE-LEAF WINTER CREEPER	2′	3′	E			Sun Shade	Does best with some summer water. Also known as *E. radicans*.
Fragaria chiloensis SAND, BEACH, or CHILEAN STRAWBERRY	6″	1.5′	E	NW	Yes	PtShd	Needs annual mowing or cutting back to force new growth.
Helianthemum cvs. SUN ROSE	10″	1.5′	E		Yes	FSun	Does best in dry settings, rock gardens. Plants are not long-lived; become straggling after a few years.
Iris tenax and other species PACIFIC COAST IRIS and HYBRIDS	12″	2′	E	PDX	Yes	Sun LtShd	Good in day shade

Botanical Name **COMMON NAME**	**Height**	**Spacing**	**Evergreen/ Deciduous**	**Native**	**Drought Tolerant**	**Sun or Shade**	**Remarks**
GROUND COVERS							
Mahonia nervosa *(Berberis nervosa)* LONGLEAF MAHONIA	2′	2′	E	PDX		PtShd/ Shade	*M. nervosa* requires shade
Mahonia repens *(Berberis repens)* CREEPING OREGON GRAPE	18″	2′	E	NW	Yes	FSun PtShd	
Oxalis oregana REDWOOD SORREL	8″	Indet.	D	PDX	Yes	Shade	Looks best with summer water.
Petasites frigidus var.palmatus SWEET COLTSFOOT	18″	3′	D	PDX			Can sit in water. Very vigorous and will spread.
Polystichum munitum SWORD FERN	2-3′	3′	E	PDX	Yes	Shade	Grows best with summer water
Ribes laurifolium LAUREL-LEAVED CURRANT	8″	3′	E		Yes	Shade	Grows best with some summer water. Difficult to find.
Sarcococca hookeriana var. humilis HIMALAYAN SARCOCOCCA	*20″*	*2′*	*E*			*Shade*	*Does well even in deep* shade. Best with some summer water.
Trachelospermum jasminoides & *T. asiaticum* STAR JASMINE	10″	2′	E			FSun/ PtShd	Fragrant. *T. asiaticum* is hardier, but must grow over peak of fence or wall to flower. *T. majus* is also hardy, but not readily available in region yet.
Zauschneria spp. CALIFORNIA FUSCHIA	18″	2.5′	Semi-E		Yes	FSun	
GROUND COVERS, GRASSES AND GRASS-LIKE PLANTS							
Acorus gramineus ‘Ogon’, ‘Variegatus’ GRASSY-LEAVED SWEET FLAG	1′	1.5	E			FSun/ PtShd	Tolerates wet soil and standing water.
Carex morrowi SEDGE	2′	1.5′	E			Sun Shade	
Elymus magellanicus MAGELLAN GRASS	2′	3′	E		Yes	FSun/ PtShd	Does best with some summer water.
Festuca glauca ‘Elijah Blue’ BLUE FESCUE	1′	1′	E		Yes	FSun/ LtShd	Best in full sun. Does not tolerate wet soils.
Hokonechloa macra ‘Aureola’ HAKONE GRASS	20″	2′	E			FSun/ PtShd	Perfers partial shade. Needs some summer water.
Helichtotrichon sempervirens BLUE OAT GRASS	2′	1.5′	E		Yes	FSun/ lt/shd	Tolerates light shade, but does best in full sun; best color in dry soils.
Juncus patens GROOVED RUSH	3′	3′	E	PDX	Yes	Yes	Requires moist soil. Tolerates standing water.