

WATERWISE TIPS

STREETSCAPE GUIDE .org



CITY OF BEND

Your Guide to Conserving Water in Street Side Landscaping



STREETSCAPE

INTRODUCTION

Whether an early morning stroll along the Deschutes River or an afternoon of paddling on a High Cascade lake, there are many ways to get out and explore the diverse and natural wonders of Central Oregon. Many of these activities are centered on access to and the availability of our most precious natural resource, water. It plays an integral role in the many ways we recreate and relax. It is also essential for our very survival. How we use it says a lot about us. Ultimately, it is our responsibility to use water without waste and with stewardship in mind regardless of whether we are kayaking across a mountain lake, drinking a tall glass of water on a hot day or programming an irrigation controller.

Our urban landscapes can offer a continuation for our love for the outdoors as well as offering ways to mitigate the effects of a city environment. They offer a bevy of ecological benefits such as filtering out noise and air pollution, sequestering carbon, providing habitat for beneficial organisms and bringing cultural and aesthetic value to our homes, neighborhoods and community. They are where we create some of those lasting memories of being outdoors with family, friends and neighbors.



Irrigation overspray and runoff is a problem for many landscapes. This is narrow lawn strip would make an excellent transformation and save thousands of gallons of water each growing season.

Unfortunately, these landscapes can require a significant amount of supplemental irrigation during our Central Oregon growing season. In fact, roughly 60 percent of all residential water use in Bend occurs outdoors, most of which goes to landscape irrigation. Much of that irrigation is lost due to overwatering through improper irrigation scheduling and to irrigation overspray or runoff onto adjacent streets, sidewalks and driveways.



Streetscapes like the one shown here provide an attractive landscape that results in zero irrigation overspray and runoff into the adjacent street. They are an excellent solution for narrow and irregular shaped landscape areas that are commonly found along Bend streets.



Seasonal water use comparison for a Bend Streetscape when compared to lawn. Each area is only 150 square feet, but the annual water use is different. This is largely due to two things – the higher water needs of typical lawn and the difficulty of irrigating narrow, irregular shapes with overhead sprinklers that result in water wasted through overspray or runoff.

One area of the landscape in particular is a regular culprit of irrigation overspray and runoff. This area is called the “street strip.” Street strips are those narrow, fragmented areas of landscape between the street and sidewalk that are nearly impossible to irrigate with conventional sprinklers. They regularly range from three to six feet wide and can be several times that in length. They can be some of the most difficult areas to landscape and even more difficult to irrigate without getting water on the street.

The purpose of this guide is to provide a step by step guide for homeowners and contractors that are ready to convert their street strips to better looking, more water efficient alternative – Bend Streetscape! Streetscapes require a more holistic approach to landscaping along Bend streets and include an initial design or landscape plan, a focus on soil preparation and grading, an efficient drip irrigation system and minimal routine maintenance. When designed and installed correctly, a Bend Streetscape will offer that same bevy of ecological benefits, but will do so without wasting water through irrigation overspray and runoff.

Please note - Some street strips in Bend are designed to collect and retain stormwater. These shouldn't be tampered with as they are engineered for a specific purpose. Please contact the City of Bend WaterWise Program (541-317-3000 opt. 2) if you have questions about your street strip.

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Bend Streetscapes can add a variety of benefits to a landscape. Not only can they save thousands of gallons of water, they can also add ecological benefits such as playing host to beneficial insects like area pollinators.



Simple Transformations generally include a layered combination of a groundcover, perennials, and shrubs. These transformations are great for narrow and wide streetscape areas alike and allow the owner to choose from a wide variety of plant colors, textures and blooms.

STREETSCAPE TYPES

The types and examples of Streetscape transformations detailed in this guide are intended to address common design concerns many will encounter. This is just a start. These ideas can be mixed and matched, used in combination with street tree plantings, or provide the starting point needed to create a unique Bend Streetscape design.

In this guide we will present four basic options to follow or to use as a springboard to come up with a unique design. The four types include:

- **Simple Transformation**
- **Urban Meadow**
- **Perennials for Pollinators**
- **High Desert Natives**

Each type is covered in greater detail in the following pages. And, while each is unique in its own way, all Bend Streetscape share a few common traits. All are water efficient, aesthetically pleasing, and functional. Drip irrigation keeps water on the landscape, colorful combinations of plantings keep things visually interesting, trees provide shade, and flowers offer opportunities for local pollinators – all in a Bend Streetscape!

The following pages include:

Sample Plan: Sample plans offer a basic layout option that notes differing plant layers such as groundcover layer, perennial layer, and shrub layer. These plans can provide a sense of how many plantings will need to make the transformation and how they can be spaced within the area.

Plant Schedule: Plant schedules offer several suggested species that do well in our climate. There are several options of plant species listed here that will work well for the location. All of the plants listed in this guide are considered low to moderate water use plants.



Urban Meadow transformations are great for narrow and sloped areas, but do well in a perfectly flat “meadow-like” areas too. These transformations offer seemingly endless combinations of perennials and flowers to choose from and require very little maintenance once established.



Perennials for Pollinators offers a destination point for those interested in showy displays of blooms and flowers throughout the growing season. These transformations provide additional nectar and pollen for local populations of bees, butterflies, birds and other pollinators.



The High Desert Native is an ode to the larger Central Oregon landscape. These Streetscapes offer a glimpse into a what its like to take a short walk through the Deschutes National Forest and include many of the same plant species.

Concepts & Photos: Visualizing the final Bend Streetscape is easier with a conceptual image of the sample plan. These help provide a three dimensional preview of the sample plan. Photos of real Bend Streetscapes bring it all together and show how great a water efficient Bend Streetscape can look!

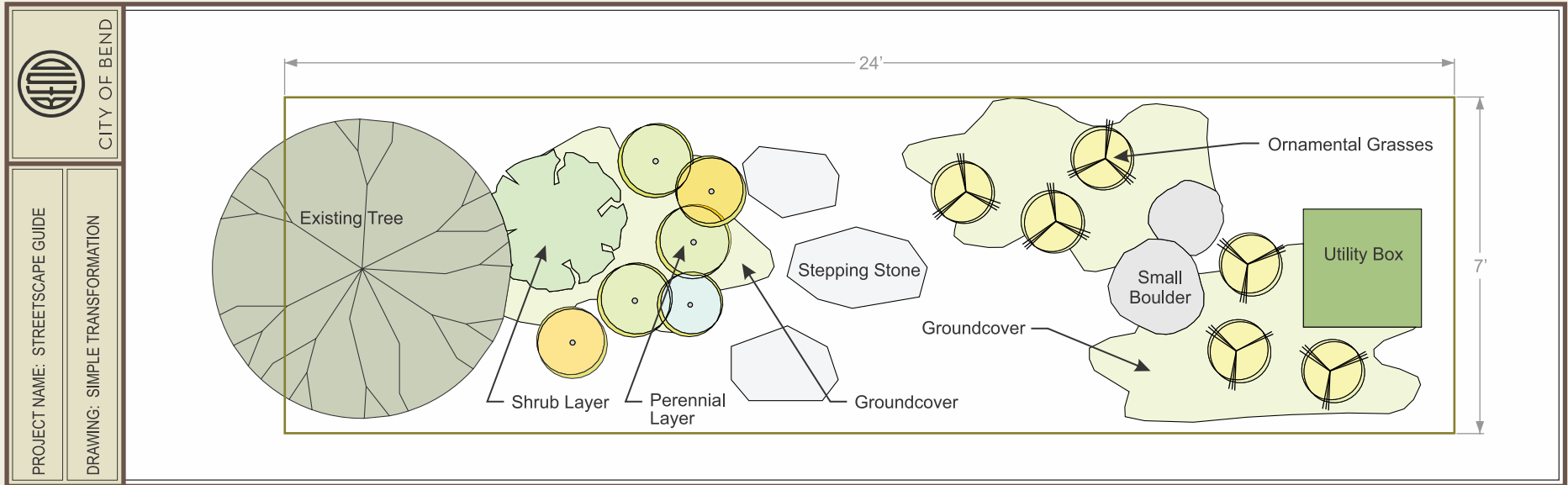
Take time to review each of the four Streetscape types to see which characteristics may apply to your site. Do you have regular street parking where accessibility or foot traffic needs to be considered? Do you prefer a colorful garden full of perennials and flowers or do you prefer a more native look? And how can the area be irrigated without getting irrigation overspray and runoff into the street? These are just some of the many questions to consider when gearing up for a Bend Streetscape Transformation.

The good news is that you're not alone! Many landscape owners have already taken the plunge and transformed their water intense streetstrip to a more water conscious Bend Streetscape. Take a walk, bicycle ride or drive through town and you'll begin to notice where these transformations have taken root. Take notes, take pictures, and get inspired to start your Bend StreetScape transformation!

Please note - *These projects can be challenging. It is common to find heavily compacted soils, utility boxes, and regular foot traffic in these locations. Don't hesitate to contact a professional landscape or irrigation contractor to get a professional opinion and help. And always consider hiring a professional landscape architect or designer to lend a hand designing your Bend Streetscape.*

SIMPLE TRANSFORMATION

Simple combination of perennial shrubs, flowering with perennials and ground cover in a cluster style planting 30-50% plant cover. Irrigated easily with point source drip irrigation.

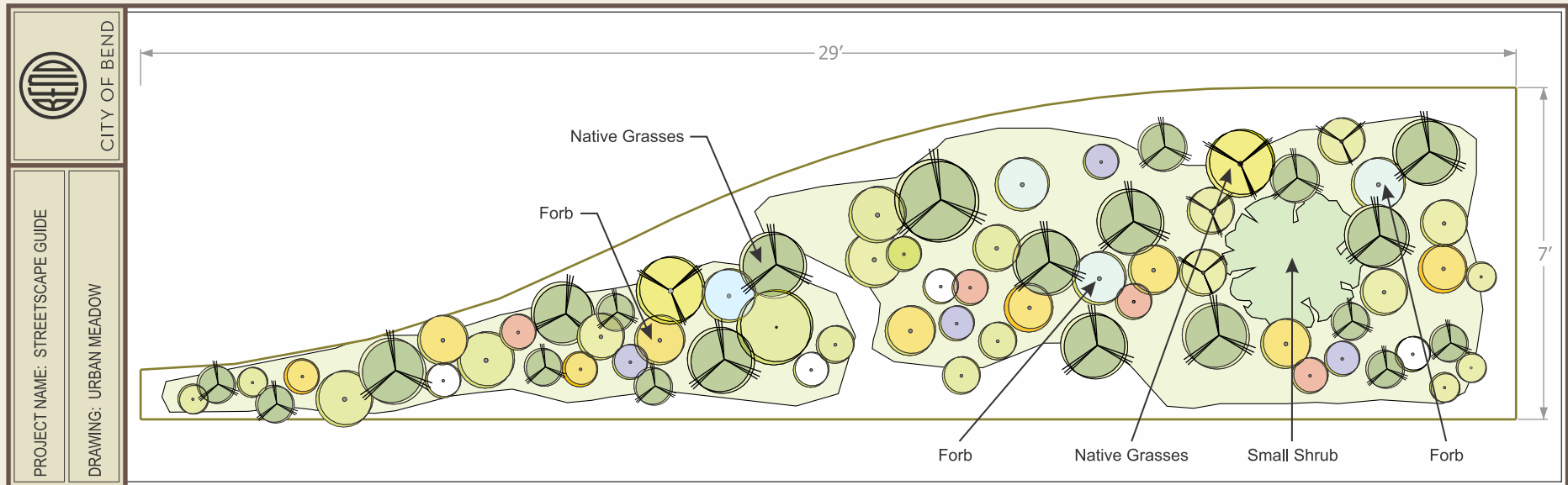


PLANT TYPE	SCIENTIFIC NAME	HEIGHT	SPREAD	EXP
SHRUB LAYER				
Kelsey Dogwood	<i>Cornus stolonifera 'Kelseyi'</i>	2-3'	2-3'	S/PS
Spirea	<i>Spirea spp.</i>	2-4'	2-4'	S/PS
Snowberry	<i>Symphoricarpos albus</i>	4-6'	4-6'	S/PS
PERENNIAL LAYER				
Basket of Gold	<i>Aurinia saxatilis</i>	8-18"	6-12"	S
Daylily	<i>Hemerocallis spp.</i>	1-4'	1-3'	S/PS
Catmint	<i>Nepeta x faassenii 'Walker's Low'</i>	12-28"	18-26"	S/PS
Penstemon	<i>Penstemon spp.</i>	4-48"	6-36"	S/PS
ORNAMENTAL GRASSES				
Feather Reed Grass	<i>Calamagrostis x acutiflora 'Karl Forester'</i>	3-6'	1-2'	S
Blue Fescue	<i>Festuca ovina glauca</i>	10-12"	10-12"	S
Switch Grass	<i>Panicum virgatum</i>	3-4'	3-4'	S/PS
GROUNDCOVER				
Kinnickinnick	<i>Arctostaphylos uva-ursi</i>	4-8"	12-24"	S/PS
Snow-in-Summer	<i>Cerastium tomentosum</i>	6-12"	24-36"	S/PS
Thyme	<i>Thymus spp.</i>	1-4"	6-18"	S/PS



URBAN MEADOW

Urban Meadow transformations offer seemingly endless combinations of perennials and flowers to choose from and require very little maintenance once established. The high planting density of these transformations usually requires inline drip irrigation buried 3" to 6" below grade.

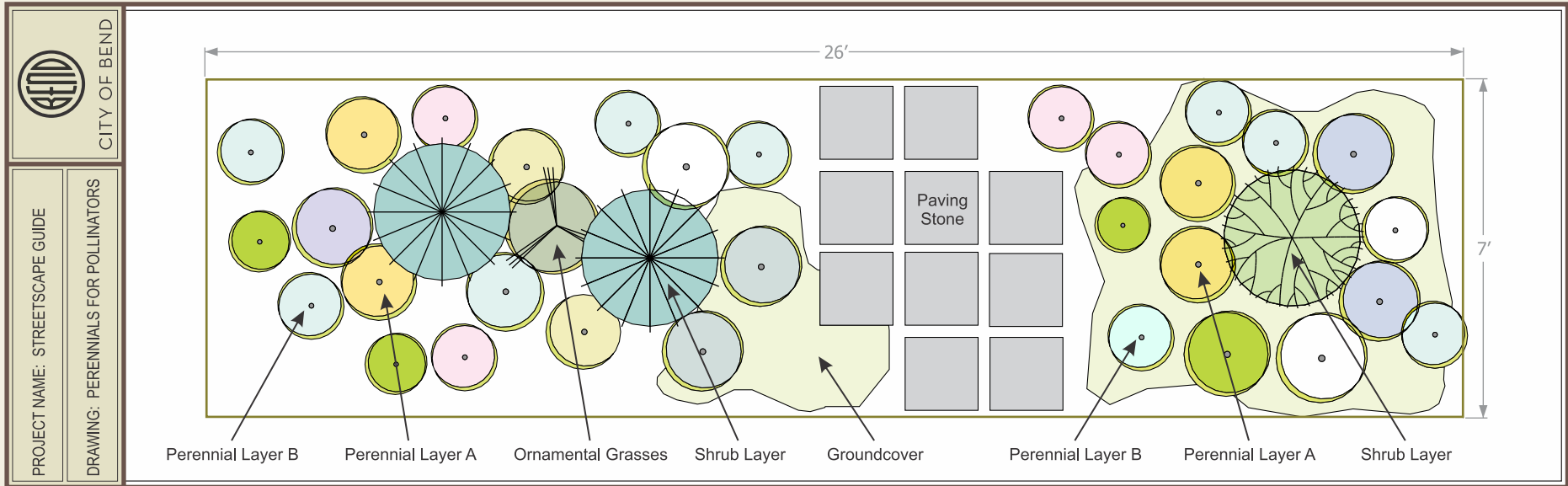


PLANT TYPE	SCIENTIFIC NAME	HEIGHT	SPREAD	EXP
SMALL SHRUBS				
Green Rabbitbrush	<i>Chrysothamnus viscidiflorus</i>	3-4'	2-4'	S
Russian Sage	<i>Perovskia atriplicifolia</i>	3-5'	3-4'	S
NATIVE GRASSES				
Indian Ricegrass	<i>Achnatherum hymenoides</i>	8-30"	18-24"	S
Idaho Fescue	<i>Festuca idahoensis</i>	12-18"	18-24"	S
Needle and Thread Grass	<i>Hesperostipa comata</i>	2-4'	3'	S
Prairie Junegrass	<i>Koeleria macrantha</i>	1-2'	18-24"	S
Sandberg Bluegrass	<i>Poa secunda</i>	8-14"	2'	S
Bluebunch Wheatgrass	<i>Pseudoroegneria spicata</i>	2-4'	3-4'	S/PS
FORBS				
Purple Prairie Clover	<i>Dalea purpurea</i>	12-15"	18-24"	S
Threadleaf Fleabane	<i>Erigeron filifolius</i>	12"	18-24"	S
Blanket Flower	<i>Gaillardia aristata</i>	12-18"	24"	S
Prairie Lupine	<i>Lupinus lepidus</i>	6-12"	18"	S
Blue Flax	<i>Linum perenne</i>	1-2'	24"18"	S
Fragrant Evening Primrose	<i>Oenothera caespitosa</i>	3-9"	24"	S
Scarlet Globemallow	<i>Sphaeralcea coccinea</i>	6-18"	12-18"	S
Sticky Geranium	<i>Geranium viscosissimum</i>	10-24"	24"	S/PS
Blue Flag Iris	<i>Iris missouriensis</i>	12-24"	24-30"	S



PERENNIALS FOR POLLINATORS

The Perennials for Pollinators transformation is a great way to attract beneficial insects to the landscape while enjoying full season color. Densely planted pollinator transformations require inline drip irrigation, but point source can be used for less dense planting areas.

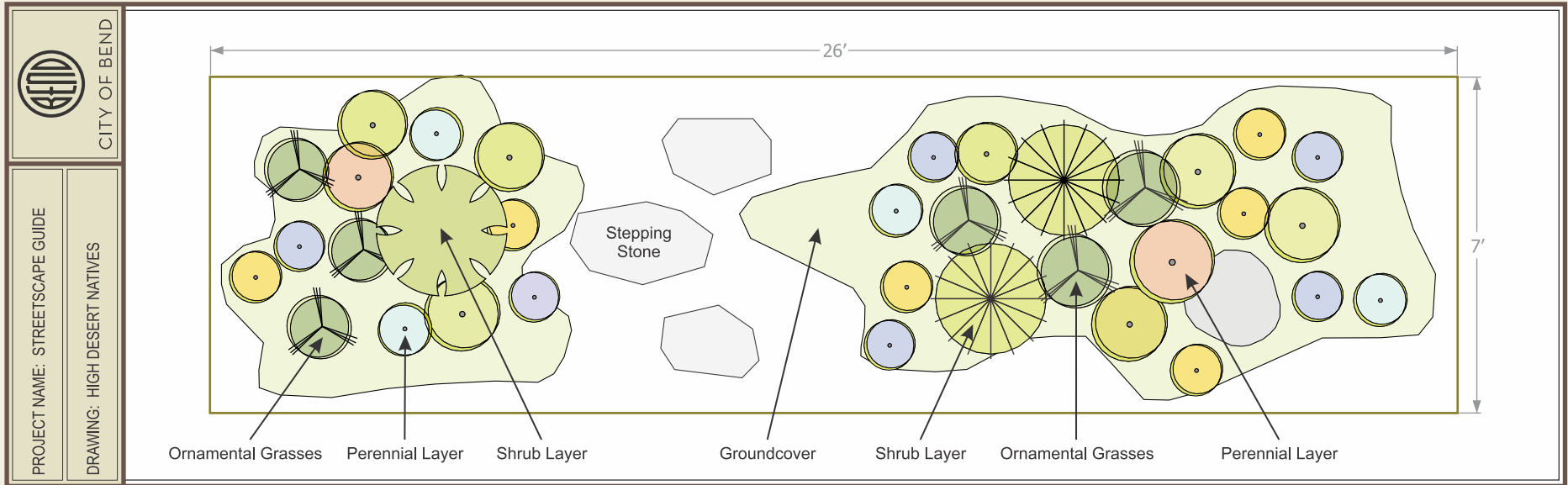


PLANT TYPE	SCIENTIFIC NAME	HEIGHT	SPREAD	EXP
SHRUB LAYER				
Chokeberry	<i>Aronia melanocarpa</i>	3-6'	3-6'	S/PS
Blue Mist Spirea	<i>Caryopteris x clandonensis</i>	3-5'	3-5'	S/PS
Alpine Currant	<i>Ribes alpinum</i>	3-5'	4-5'	S/PS
Creeping Oregon Grape	<i>Mahonia repens</i>	12-18"	2'	S/PS
PERENNIAL LAYER A				
Yarrow	<i>Achillea species</i>	1-4'	1-4'	S
Coneflower	<i>Echinacea spp.</i>	2-3'	18-24"	S
Sea Holly	<i>Eryngium spp.</i>	2-3'	2-3'	S
Gayfeather	<i>Liatris spp.</i>	1-3'	8-15"	S
Garden Phlox	<i>Phlox paniculata varieties</i>	2-3'	1-2'	S
PERENNIAL LAYER B				
Pacific Aster	<i>Aster chilensis</i>	12-24"	12-24"	S
Blanket Flower	<i>Gaillardia spp.</i>	8-36"	12-24"	S
Salvia	<i>Salvia sylvestris</i>	18-28"	18-24"	S
Penstemon	<i>Penstemon spp.</i>	4-48"	6-36"	S/PS
ORNAMENTAL GRASSES				
Blue Grama Grass	<i>Bouteloua gracilis 'Blonde Ambition'</i>	30-36"	30-36"	S/PS
Tufted Hair Grass	<i>Deschampsia caespitosa</i>	2-3'	1-3'	S/PS
Prairie Junegrass	<i>Koeleria macrantha</i>	12-24"	12-20"	S
GROUNDCOVER				
Mt. Atlas Daisy	<i>Anacyclus depressus</i>	1-2"	10-12"	S
Creeping Phlox	<i>Phlox subulata</i>	4-6"	18-24"	S
Soapwort	<i>Saponaria ocymoides</i>	4-5"	15-18"	S/PS



HIGH DESERT NATIVES

The High Desert Native transformation draws inspiration from the beautiful natural landscape of Central Oregon and shares a plant palate with the Deschutes National Forest. Densely planted applications require inline drip irrigation, but less dense plantings can utilize point source drip irrigation.



PLANT TYPE	SCIENTIFIC NAME	HEIGHT	SPREAD	EXP
SHRUB LAYER				
Big Sagebrush	<i>Artemisia tridentata</i>	4-5'	3-6'	S
Desert Sweet	<i>Chamaebatiaria millifolium</i>	6-8'	3-6'	S
Green Rabbitbrush	<i>Chrysothamnus viscidiflorus</i>	3-4'	2-4'	S
Antelope Bitterbrush	<i>Purshia tridentata</i>	3-6'	4-8'	S
PERENNIAL LAYER				
Blue Flax	<i>Linum lewisii</i>	1-2'	12-14"	S
Orange Globemallow	<i>Sphaeralcea munroana</i>	36-42"	24"	S
Fleabane	<i>Erigeron spp.</i>	4-24"	12-24"	S
Sulphur Buckwheat	<i>Eriogonum umbellatum</i>	10-12"	24-36"	S
Black-eyed Susan	<i>Rudbeckia hirta</i>	1-4'	1-2'	S
Penstemon	<i>Penstemon spp.</i>	1-4'	6-36"	S
ORNAMENTAL GRASSES				
Indian Ricegrass	<i>Oryzopsis hymenoides</i>	8-30"	8-14"	S
Idaho fescue	<i>Festuca idahoensis</i>	4-6"	8-12"	S/PS
Prairie Junegrass	<i>Koeleria macrantha</i>	12-24"	12-20"	S
GROUNDCOVER				
Rosy Pussytoes	<i>Antennaria microphylla</i>	2-12"	8-10"	S
Wood's Strawberry	<i>Fragaria virginiana</i>	3-4"	10-12"	S/PS
Stonecrop	<i>Sedum spp.</i>	2-12"	6-24"	S/PS



STEPS TO SUCCESS

Step 1 Planning & Design

Bend Streetscapes provide many ecological benefits and serve as a buffer to the effects of traffic, bringing a calm influence to urban life, and create interest and theme for neighbors and passersby alike. However, these are also functional areas that act as corridors for pedestrian, bicycle, and vehicular traffic requiring final Streetscape designs to consider safety, accessibility, visibility and traffic. To get a sense of how these functional uses may impact a Streetscape design, take time to understand how the area is currently used and how a new design will cater, or not, to those uses. For example, if street side parking is needed, a design with well-spaced, smaller plantings would make sense over dense plantings of large shrubs.



Take time to examine how your street strip is currently used and how it will need to function once transformed into a Bend Streetscape.

This is also the time to check with local home or property owners associations to see if there are any landscape requirements that need to be incorporated into the new design. Many HOAs have existing codes, covenants and restrictions that outline required landscape specifications.

Be sure you're not impacting an area designed to collect stormwater. Street side landscape areas designed to collect and retain stormwater shouldn't be considered as candidates for a Streetscape. Call the WaterWise Program (541-317-3000 Opt. 2) if you have questions about your street strip.



Call before you dig! Street strips are prone to having underground utilities beneath. Be safe and know where they are by calling 811 to get a free utility locate. Taking this step will not only keep you safe, but it will also help you understand what challenges and obstructions exist below grade.

Streetscape Design Guidelines				
Width of Planter	Maximum Shrub Height	Setback to Hardscape	Maximum Berm Height	Street Tree Option
1' to 3'	12"	NA	None	None
3' to 5'	12" to 18"	12"	6"	Max Ht. 15' (Min. 4' Width)
5' to 8'	24" to 48"	24" to 30"	12"	Max Ht. 25'
8' to 12'	4' to 6'	30" to 36"	18"	Max Ht. 35'
Above 12'	5' to 7'	36" to 48"	24"	35' and Above for Approved Species

Other important factors that will affect your design include the width of the street strip, proximity to traffic intersections, exposure to sun and shade, degree of slope, quality of existing soil, and more. Ultimately, a Streetscape design can be relatively simple or very detailed, but the goal is for it to be an accurate representation of the desired product. The more detailed and accurate the plan the better you'll be able to account for project and material costs.

Step 2 Site Preparation & Grading

Most Streetscape transformations start with some basic excavation and possibly the removal of an existing sod layer. Removing the sod and creating a functional subgrade can be physically challenging, but is the foundation for the entire project. For larger areas, the use of a powered sod cutter is generally the easiest way to prepare the area for sod removal. Be prepared to remove and recycle a significant amount of material though. Just 100 square feet of sod can generate a cubic yard of material weighing nearly 2,000 lbs.

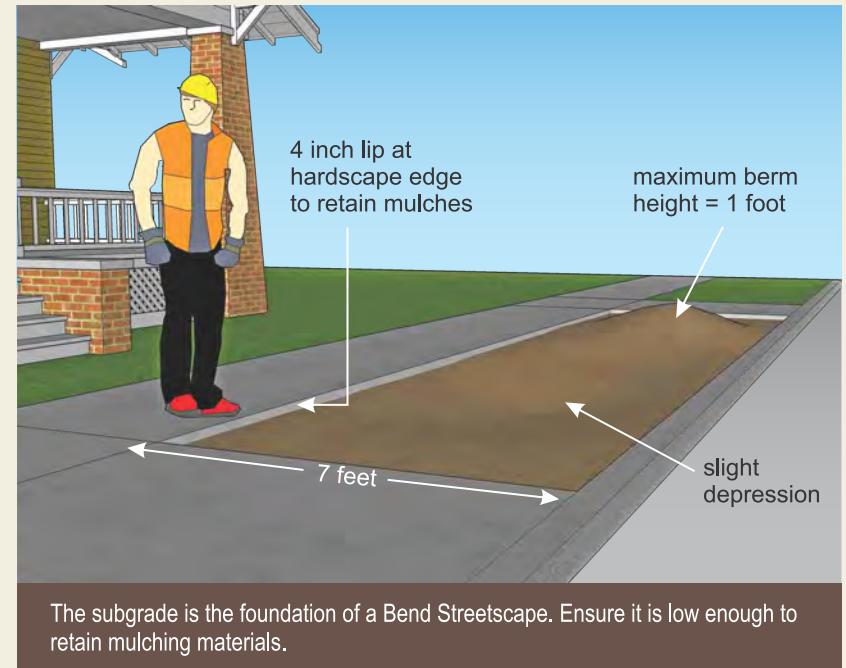
Establishing a Subgrade

The subgrade, or grade before planting and mulching, should mirror the projected finish grade and be 4" lower than where the grade meets the sidewalk, curb or surrounding hardscape. No Streetscape should have contour grading or mounding at a slope greater than one foot of rise for every four feet of distance. However, gentle sloping between mounding and depressed areas can provide visual interest, mimic natural landscape undulations and provide micro-environments for a diverse plant palette. Taking time to create a subgrade that conforms to these criteria will save many headaches and make the transformation process easier going forward.

Pre-Plant Weed Control

Get a jump on controlling weeds by reducing weed pressures at the start of your project. Mother Nature regularly fills in any open gap in the soil with the first available plant seed she can find. Be ready! Staying on top of weeds early in the transformation will lead to a better and easier to maintain project. Deep rooted perennial weeds and annual weeds that are prolific seed producers will be more difficult to control so be persistent. Generally, it is best to attack weeds when they are actively growing. Follow-up a week or two afterwards with a second effort.

Weed control methods vary and are largely influenced preference. Organic weed control through hand removal or organic herbicides are common approaches. Both are effective and work best when multiple treatments can be timed to allow for pesky weeds to re-emerge, be retreated, and eventually exhausted.



Other weed control methods include the use of glyphosates and are an effective way to treat weeds in a short amount of time. When applied correctly and in accordance with the manufacturer's instructions, glyphosates will enter the weed leaves and travel to the plant roots killing plants within one or two weeks. As with organic weed control methods, a well-timed repeat application when weeds re-emerge will help to exhaust hard to control weeds.

Right-of-Way Planting Guidelines	
All Plantings Within 20' of Intersection	No Greater than 24" in Height
Street Trees 10' to 25' in Height	Min. 30' from Intersection
Street Trees >25' in Height	Min. 35' from Intersection
All Street Trees	Min. 15' from Alley
Street Trees Under Utility Lines	No Greater than 25' in Height
Street Trees Near Utility Boxes or Vaults	No Closer than 5'

Step 3 Improving Soil Conditions

Soil is a living thing! It is a four dimensional, self-organizing natural body that serves as habitat for millions of soil organisms in a constant state of interaction. Healthy soil is free of compaction, has a good balance of micro and macro pores that define its structure, is able to house and support the interacting organisms, and has sufficient organic matter to help hold water and nutrients. Plants growing in healthy soil tend to use less water, be more resilient to pest and environmental pressures, and require less supplemental fertilization.

Unfortunately, Central Oregon soils are a bit more challenging. They are typically coarse in texture, low in organic matter, and limited in their ability to hold onto water and nutrients. In addition, soils in most street strip locations are subject to extreme compaction and often contaminated with construction materials such as gravel, rock and concrete. A simple way to improve soil quality is to incorporate organic matter thoroughly into the soil profile. For dense plantings a 2" to 3" layer of soil amendment mixed to a depth of 6" to 8" is ideal. Less dense or individual plantings can be amended individually with a quantity of amendment roughly equal to one-third the size of the planting hole.



Deep incorporation of amendment to improve poor soil conditions. Be sure to sweep excess dirt and debris from streets and sidewalks.

Step 4 Irrigation

Irrigating a Streetscape without waste can be tricky. The irregular shapes, narrow dimensions, and surrounding hard surfaces make these areas extremely difficult to irrigate with above ground sprinklers. This is a large reason why we regularly see irrigation overspray and runoff in Bend. When water gets away from the landscape it not only wastes water, it can also have a negative impact on our stormwater system and watershed if it washes motor oil, dirt and debris, or other contaminants into a nearby catch basin. It can also pose a safety risk to bicyclists and pedestrians, especially during the cool temperatures Bend experiences each spring and fall.

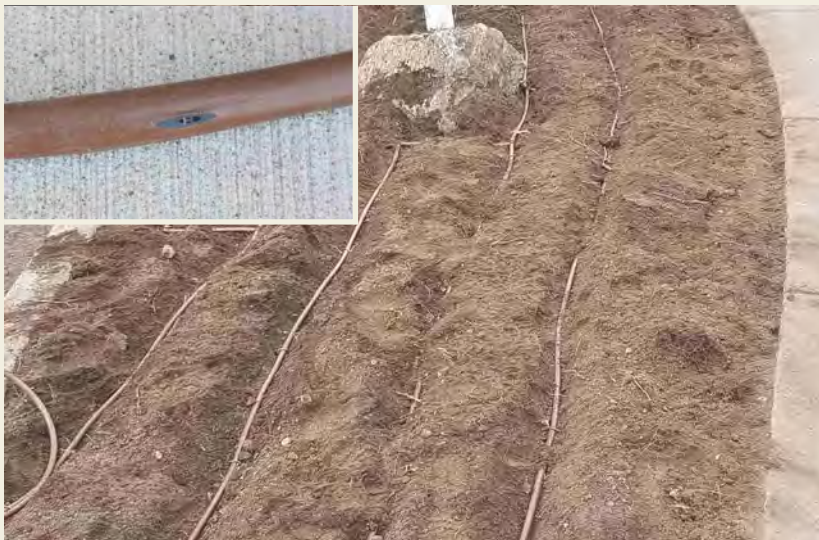
Good news! Drip irrigation has come a long way in recent years and is an excellent way to irrigate a Bend Streetscape. Drip irrigation provides an efficient way to get water directly to where it is needed – the plant roots. And, it does this with virtually zero irrigation overspray and runoff.



Drip irrigation conversion kits make the transition to a more efficient irrigation system much easier.

Converting an irrigation system zone with pop-up style sprinklers to a drip irrigation zone is easy. Irrigation manufacturers offer several **drip irrigation conversion kits** that are readily available and marketed toward the do-it-yourself crowd. Each generally includes some form of pressure regulator to drop the zone's pressure to 35 to 40 psi plus an in-line filter to keep drip emitters from clogging. Some conversion kits are more expansive and offer drip tubing, drip emitters and an end cap for flushing or blowing out the drip tubing.

Streetscapes with dense plantings and spacing under two feet on center should consider using **inline drip irrigation**. Inline drip irrigation has emitters inside of ½" tubing (spaced every 12" to 24") and is laid throughout the planting area in an organized fashion. It is buried 3" to 3" below grade and secured with U-shaped spikes. Streetscapes that include seed mixes may require temporary overhead watering for germination, but can rely on inline post-establishment.



Inline drip is excellent for densely planted areas such as the urban meadow.

Streetscapes that have less dense plantings should use **point-source drip irrigation**. Point-source irrigation involves a different type of ½" pipe. This one is solid and contains no emitters. However, emitters are added through use of a punch tool. Smaller, ¼" tubing is then run to the base of individual plantings. This is an incredibly efficient method of irrigation.



Point source drip irrigation is an extremely efficient way to deliver irrigation to less dense plantings.

If the irrigation zone serving the Streetscape also provides irrigation to other areas of the landscape, additional work may be necessary. For example, since lawn areas need roughly twice the water as desert adapted trees or shrubs, it wouldn't make sense to irrigate them with the same irrigation zone as the Streetscape. The lawn irrigation sprinklers should be separated and a new irrigation zone added to serve the area.

New plantings require more frequent irrigation, but less run time than irrigation zones serving established plantings. Pay close attention during this establishment period and don't be afraid to do some hand watering if necessary to keep the plant roots happy at this stage. Ultimately, you'll need to program your irrigation controller to deliver just the right amount of water to your Streetscape. The best and most common way to make regular irrigation schedule adjustments is to set your irrigation controller to maintain plantings during peak season (July-August) and use the Seasonal % Adjust feature to adjust run times throughout the season. For additional irrigation and programming direction, be sure to review the City of Bend Irrigation Guide available at waterwisetips.org.

Step 5 Planting

One of the main goals of sound landscape design is to use and place plants in locations where they can grow and exhibit the form and character they were originally selected for. When a plant gets too large for a location it can begin to protrude into adjacent structures, sidewalks, roadways, or bike lanes. Too often the remedy seems to be a heavy shearing of the plant. Heavy and regular shearing like this can shock unsuspecting plants leaving them stressed and more prone to pests.

Avoiding these planting pitfalls and remembering the old adage “right plant – right place” is particularly important when transforming a street strip into a Bend Streetscape. The narrow and often irregular shapes of street strips often dictate what plant species can be utilized. For example, a Streetscape design for a narrow area three feet in width should rule out large shrubs that have a six foot spread at full maturity. The shrub may look great after the initial installation, but in four to five years the large shrub will regularly impede sidewalk and bike lane traffic.



Narrow planting areas like this one can only accommodate grasses, perennials and small shrubs. Larger shrubs or trees could limit visibility and require regular pruning to fit within the area. Remember to consider size at maturity and the old adage “right plant – right place.”



Proper planting includes excavating a hole 2-3 times the width of the root ball and the same depth. Incorporate soil amendments for non-native species.

Once you have the right plant in the right place, with full maturity in mind, it is time to plant! Start by excavating a hole 2 to 3 times the size of the plant container and thoroughly incorporate composted material at a rate of one third amendment to two thirds excavated soil. Remove the plant from container, relieve root bound plants by gently scarifying, and place the plant so the base of the roots are slightly above finish grade. Then, fill the hole two thirds of the way up and finish by filling to grade and lightly compacting the soil. For dry land plantings, a small basin formed around the plant will help retain water during plant establishment. Supplemental soil and plant care products such as fertilizers, moisture retention materials, and mycorrhizal fungi can be added to new plantings to improve drought resistance and nutrient uptake. These are generally added during the planting process and mixed thoroughly into the soil.

Step 6 Streetscape Maintenance

Mulch

Applying mulch to a landscape provides a boundary layer above the soil that will reduce water loss through evaporation and help control weeds. Each mulch offers its own aesthetic appeal and comes with different pros and cons. Inorganic mulches such as river rock, pea gravel, or crushed granite are stable over time, but do not offer the benefit of soil building and are hard to remove for landscape alternations.

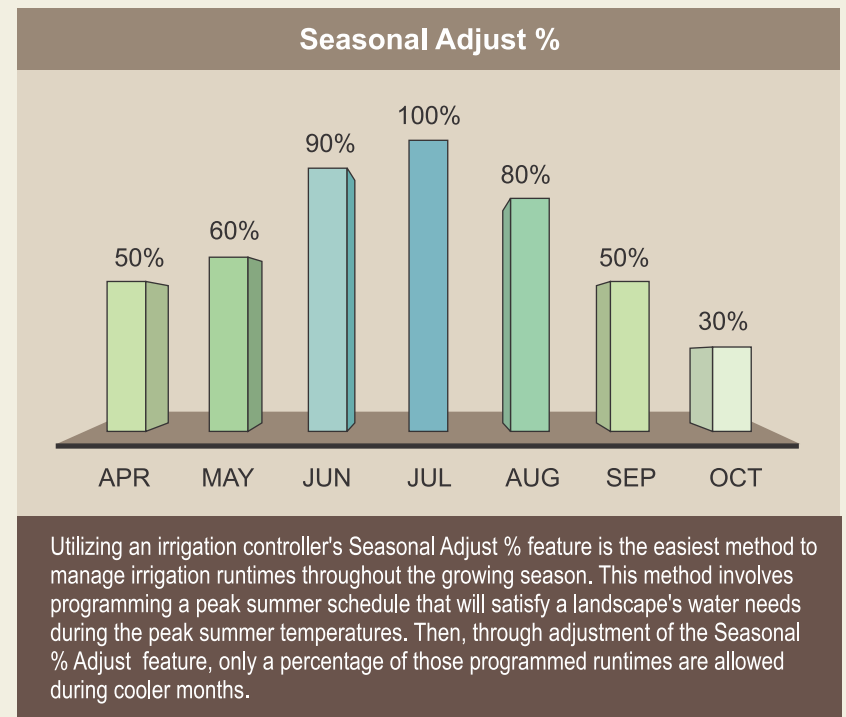
Comparison of Common Central Oregon Mulch Types			
Type	Pros	Cons	Thickness
Recycled Compost	Recycled Product; Readily Available	High C:N Ratio / Unstable; Fine Products Become Seed Bed for Weeds	2" to 3"
True Compost	Improves Soil	Low C:N Ratio / Stable; Higher Cost	1" to 2"
Fine Bark Mulch	Good Moisture Barrier	Washes / Blows Away; Becomes Seed Bed for Weeds	2" to 3"
Shredded Mulch	Holds Together	None	4"
Gravels	Clean Appearance	Compacts if Fines are Present; Reduces Gas Exchange	1" to 3"
Small Rock 1" to 3"	Clean Appearance	Difficult to Handle; Increases Heat Load	3" to 5"
Large Rock 3" to 5"	Adds Texture and Interest; Stays in Place	Difficult to Handle; Increases Heat Load	4" to 6"
Landscape Fabric	Good Weed Prevention; Good Choice When Using Med.-Large River Rock	Will Creep and Appear if not Installed Correctly	Install Min. 3" to 4" Below Finish Grade
Plastic	None	Blocks Gas Exchange; Deteriorates and Weakens	

NOTE: All mulches should not be thicker than 2" to 3" at the plant base.

Organic mulches such as shredded bark, wood chips, or compost offer greater soil benefits due to their breathability and potential nutrient content. They are generally less-expensive than inorganic, rock-type mulches and easier to spread and handle too. However, lighter mulches can have a tendency to wash away in sloped applications. Use shredded mulches that hold in place when possible.

Irrigation

Making frequent irrigation schedule adjustments throughout the year tends to save water. The City of Bend recommends programming a peak irrigation schedule into standard irrigation controllers and then utilizing a Seasonal Adjust % feature to reduce irrigation runtimes throughout the growing season.



Irrigation systems need to be monitored and checked for performance on a regular basis. A good time to look for problems is at the beginning of the irrigation season and before the weather starts to get hot. However, plan to make more routine inspections every two weeks or so.

An initial, start of season inspection should include a thorough look for leaky fittings, punctures and blocked drip emitters. These are the most common ailments seen in drip irrigation systems and usually the result of activities such as leaf raking and snow shoveling. Of course, pets and other critters also cause their share of maintenance issues too.

Future, more regular inspections will help find and identify those leaks that occur during the irrigation season. These can be fairly quick and routine so don't wait for leaks to find you. Make regular irrigation inspections habit.

Finally, be sure to have your irrigation system winterized each fall. This generally occurs around the month of October, but can happen earlier depending on the year. Winterization usually generally includes blowing out the irrigation system with a heavy duty air compressor, turning off the irrigation controller and making sure enough insulating material is there to keep irrigation valves and backflows from freezing. Be sure to choose a licensed contractor to winterize your irrigation system.

Weed Control

As mentioned in the Site Preparation and Grading section of this guide, keeping weeds at bay is an important and regular maintenance requirement for a Streetscape. This is especially true in the first two to three growing seasons. At this early stage, a Streetscape's plantings are just getting acquainted with their new location and working hard to survive the transplant and to get roots into the ground. Any competing weeds can hinder those efforts. Through continued weed control these sources will become somewhat exhausted and Streetscape plantings will occupy openings, preventing many weeds from taking hold in the first place.



Point source drip irrigation along with a 3-4 inch of course mulch is an excellent way to reduce weeds in open areas between plantings.

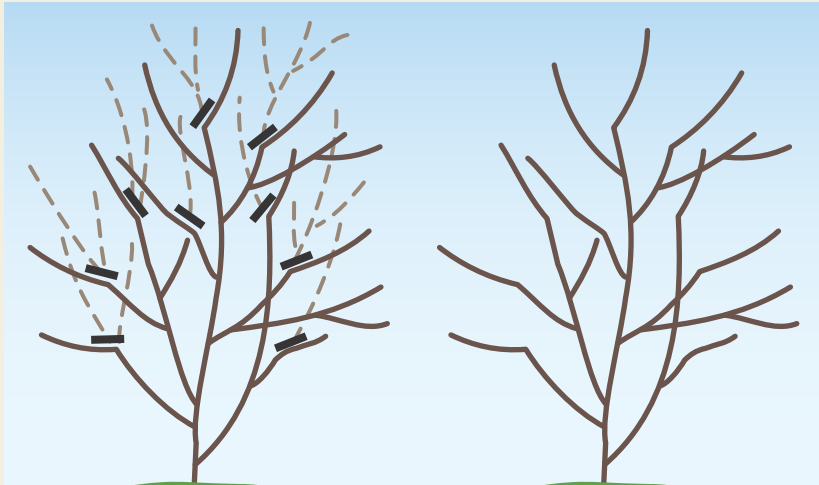
Weeds tend to invade a planting beds in several ways. In areas previously covered with a lawn, remaining plant parts such as stolons and rhizomes can easily reproduce unwanted plants (When removing an existing lawn, be sure to thoroughly remove the sod along edges). Weed seeds can also be present in soil or amendments that are imported for the project. Knowing where and how these materials are produced may go a long way in preventing additional weed seeds from being introduced to your project. Some seeds were likely there from the very start. Physical disturbance puts them in prime position to germinate in the new landscape.

Pruning

If you have done a good job with plant selection pruning requirements should be at a minimum. However, pruning can be required at times to remove crossing or dead branches, develop a single central leader, or to remove plant material that may be obstructing a view or impeding a pedestrian or bicyclist. As a general rule, it is best to prune plants when they are young and in the dormant months when possible. Pruning at the point of origin, or pruning only where a branch begins, is the best way to shape trees and shrubs as it results in less wounds to the plant. Use a clean, sharp hand pruners or loppers to make each cut.



Use a clean, sharp hand pruners to make selective cuts to trees and shrubs.



Point of origin pruning should occur where a tree or shrub branch begins.

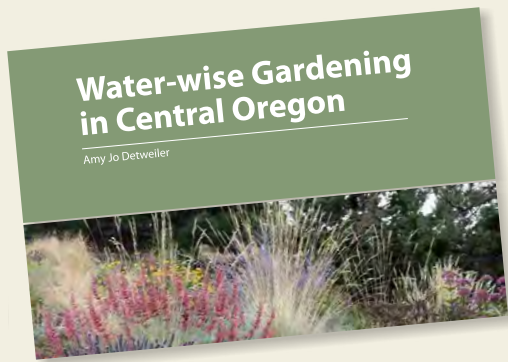
Shearing plants with powered or hand shears can often inflict more harm than good. When shearing occurs, multiple branches are cut to gain a desired shape. Unfortunately, this opens up numerous opportunities for pests to enter and ultimately stresses the plant. It is far healthier to make individual cuts at growing points with bypass pruners or loppers.



Shearing of trees and shrubs can lead to prolific growth at the shearing point, setting up a cycle of continued shearing as well as distracting from the form the plant was initially selected for.

Bend WaterWise Streetscape FAQ's

- Q** I'm only using hand tools, do I really need a utility locate?
- A** Absolutely! Street strip sites frequently have underground utilities of some type running beneath the ground. Although these are typically located at safe depths, there is no way of knowing where and how deep they could actually be. A simple strike from a shovel could lead to damage or personal injury.
- Q** There's irrigation there now, do I need to change it?
- A** If you are replacing a lawn in the narrow confines of a street strip, existing irrigation will likely be overhead-fixed spray sprinklers which make watering difficult without creating overspray and run off. Making the conversion to drip irrigation for these areas is easier than ever with a drip irrigation conversion kit.
- Q** I'd like to do the project myself, how hard is it?
- A** You can create a Bend Streetscape transformation yourself, but know that it can be physically challenging. You'll need to be able to haul equipment and materials or have them delivered. Removing the existing sod or landscape and excess rock or dirt will be the most physically demanding part of the job.
- Q** Could I just roto-till in the existing lawn?
- A** You could but it might be easier to remove the existing grass with a sod cutter. This will ensure the majority of plant parts that could re-establish are gone and will give you a clean start towards creating an excellent sub-grade and keeping weeds at bay.
- Q** How much will it cost to do a Streetscape transformation?
- A** Streetscape transformations will range significantly in cost and scope. Simple transformations with point source drip irrigation tend to be the most inexpensive, but costs are largely determined by the size and quantity of landscape plants. Overly compacted or rocky soils can also drive up the cost of a transformation.
- Q** With the lawn gone, will my new landscape require maintenance?
- A** Getting your plantings off to a good start will require some of your time. You will initially need to remove competing weeds, monitor soil moisture, and keep an eye on irrigation to ensure it is working correctly. Once plantings are established you can expect the time needed for maintenance to go down.



Water-wise Gardening in Central Oregon
 OSU Extension Service's *Water-wise Gardening in Central Oregon* is full of low to moderate water use plants. Visit waterwisetips.org for more information.

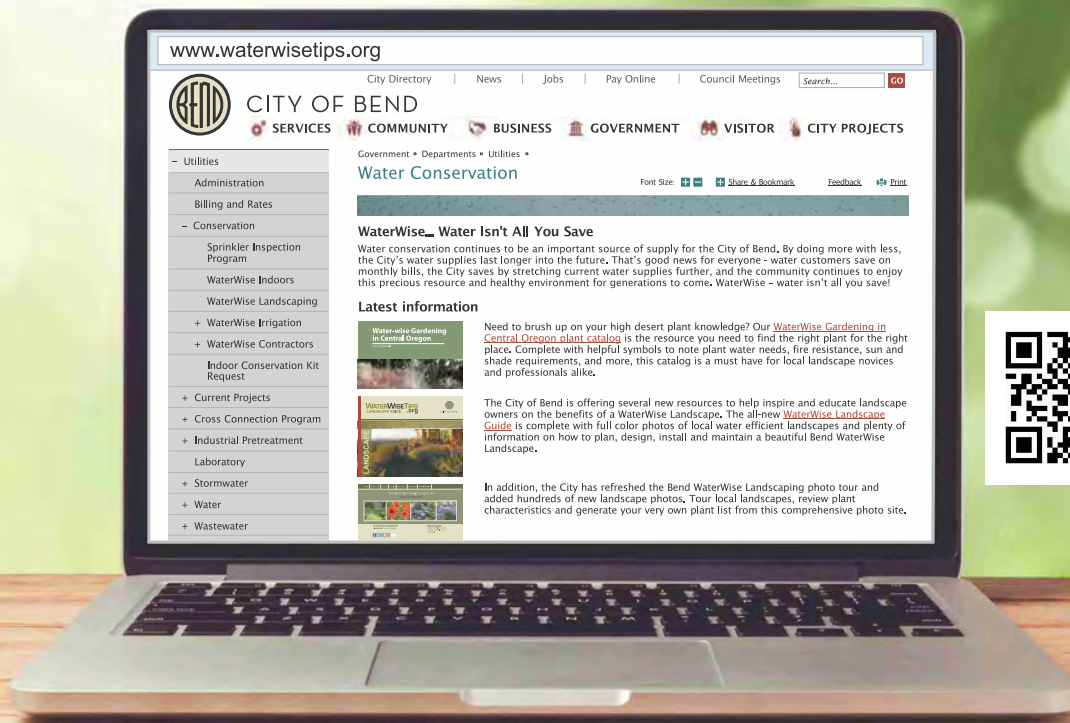
Additional Resources

- City of Bend WaterWise Program
- City of Bend Stormwater Program
- Oregon Rain Garden Guide
- Oregon State University Extension Service
- EPA WaterSense
- Irrigation Association
- Alliance for Water Efficiency
- U.S. Bureau of Reclamation
- American Water Works Association

- waterwisetips.org
- bendoregon.gov/cleanwaterworks
- waterwisetips.org
- extension.oregonstate.edu
- epa.gov/watersense
- irrigation.org
- allianceforwaterefficiency.org
- usbr.gov/pn/Agrimet
- awwa.org

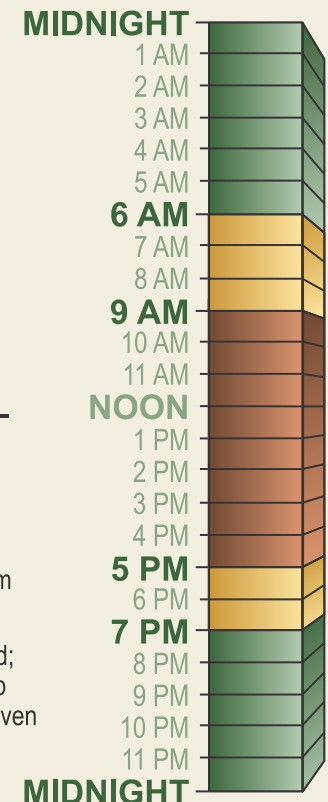
Ready For More Bend WaterWise Landscapes?

Visit waterwisetips.org for hundreds of photos of local Bend WaterWise landscapes.



IRRIGATION RULES & HOURS

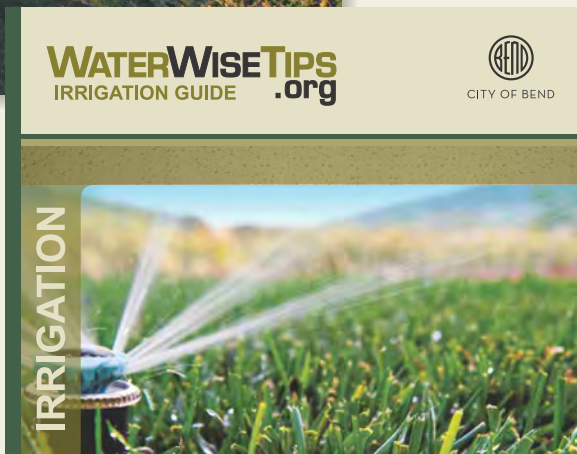
- No irrigation between 9:00 a.m. and 5 p.m.
- Even / odd days apply
- No irrigation water running off your property onto other sidewalks, streets or neighboring properties.





Look for these
WaterWise Guides:

WATERWISE TIPS
.org



Credits & Acknowledgments

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Rain Bird

WeatherTrak

City of Bend

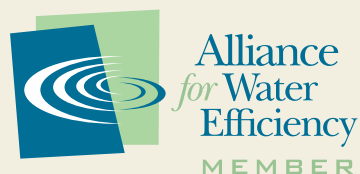
OSU Extension Service



Oregon Rain Garden Guide

One of the best ways to retain stormwater is through a rain garden.

Visit waterwise tips.org to download your free copy of *The Oregon Rain Garden Guide: A Step By Step Guide to Landscaping for Clean Water and Healthy Streams*.



Accommodation Information for People with Disabilities. To obtain this information in an alternate format such as Braille, large print, or electronic, please contact 541-317-3000 ext. 2 or email utilities@bendoregon.gov.



CITY OF BEND

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waterwisetips.org

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