TOWN OF BERTHOUD ORDINANCE
NUMBER 1327
(SERIES 2023)

AN ORDINANCE ADOPTING THE TOWN OF BERTHOUD LANDSCAPE DESIGN GUIDELINES BY REFERENCE IN MUNICIPAL CODE CHAPTER 30

WHEREAS, the Town of Berthoud is a municipal corporation possessing all powers granted to a statutory town by Title 31 of the Colorado Revised Statutes; and

WHEREAS, the Town wishes to implement the vision and values expressed in the 2021 update to the Comprehensive Plan, including strengthening the Town's sense of place, enhancing community identity, supporting community resilience and sustainability touchstones; and

WHEREAS, the Planning Commission, after proper notice, has held a public hearing on October 26, 2023 on this ordinance providing for a recommendation of approval from the Town Board of Trustees; and

WHEREAS, the Development Code and amendments thereto have been submitted to the Board of Trustees in writing and the Board of Trustees has determined that such code and amendments thereto should be adopted as herein set forth;

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN BOARD OF TRUSTEES OF THE TOWN OF BERTHOUD, COLORADO:

Section 1. The attached Town of Berthoud Landscape Design Guidelines shall be referenced in Chapter 30 and adopted.

Section 2. Interpretation: This Ordinance shall be so interpreted and construed to effectuate its general purpose.

Section 3. Effective Date: The provisions of this Ordinance shall take effect thirty (30) days following the date of public hearing to adopt the Guidelines by reference.

[INTENTIONALLY LEFT BLANK]

INTRODUCED, READ, ADOPTED, AND APPROVED on this 28th day of November, 2023.

TOWN OF BERTHOUD

By _____
William Karspeck, Mayor

ATTEST:

By: _____
Christian Samora, Town Clerk

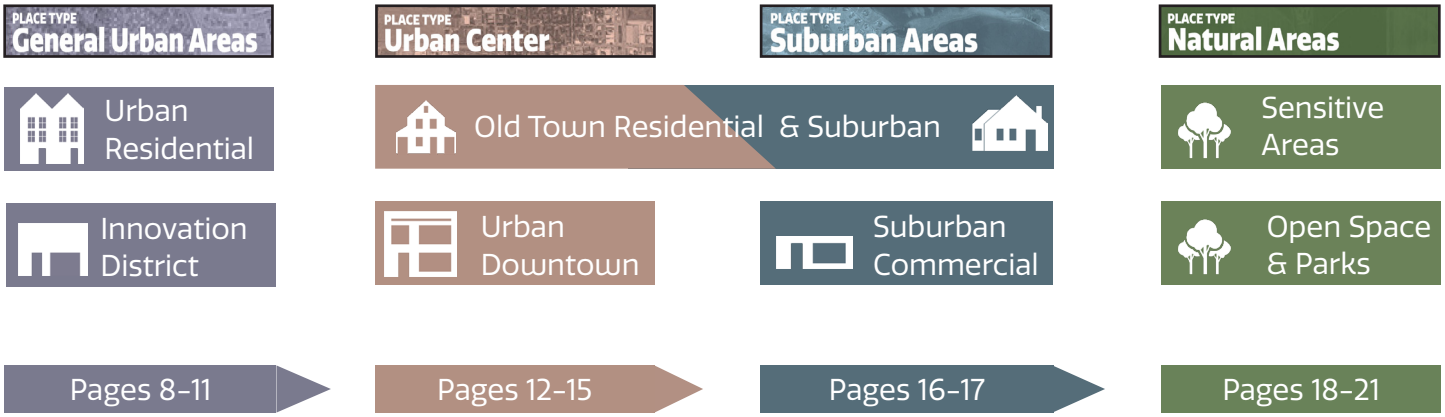
LANDSCAPE DESIGN GUIDELINES

PLACE TYPES

TOWN OF BERTHOUD DESIGN GUIDELINES

INTRODUCTION

These guidelines provide expectations regarding landscaped spaces in new development as well as information for use in the renovation of existing landscaped areas. These guidelines are organized to communicate town-wide requirements for plant selection and maintenance. Additional specific guidelines for the following character districts found in the Berthoud Comprehensive Plan update are included.



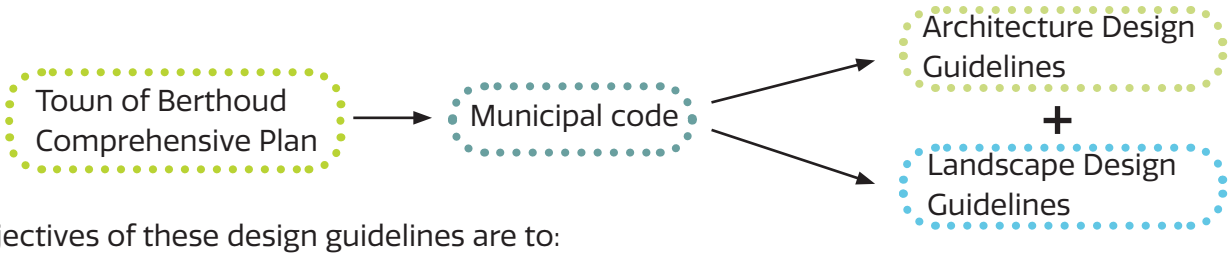
Organization:
Within each section are a number of design principles and measures that address the different elements of landscape design and environmental sensitivity based on land use. Each section of the town wide Design Guidelines will cover over arching objectives (e.g., planting, maintenance, water use etc) based on place types.

Guidelines that promote water wise and sustainable practices are designated by the water wise leaf symbol.

How To Use the Guidelines:
Property owners, developers, designers, and contractors proposing new development in Berthoud should first review the zoning of the property being developed and familiarize themselves with the Berthoud Municipal Code. They should then proceed to the most recent **Berthoud Comprehensive Plan Update**, the **Berthoud Municipal Code (Landscape Design 30-2-112)**, adopted master plans affecting the property, and finally, these **Landscape Design Guidelines**. The provisions set forth in this document identify the desired level of planting and design quality for all development; however, flexibility is necessary and encouraged to achieve excellent design. Each application for development should demonstrate to what extent it incorporates these guidelines. Applications that do not meet specific guidelines applicable to that project should provide rationale for the design and explain how the project will meet the **intent** of the Comprehensive Plan, the Municipal Code, and these Guidelines. Whether the design intent is justified will be determined through Planning Department review. Appeals to Planning Department decisions will be made to the Planning Commission.

How the Guidelines are Applied:

The Landscape Guidelines are intended for the Planning Department, as well as other town agencies and department staff, developers, architects, engineers, and community members to use in processing and evaluating project designs and applications together with relevant policies from the **Berthoud Comprehensive Plan as amended,** the **Berthoud Municipal Code (Landscape Design 30-2-112)**, and finally, these **Landscape Design Guidelines**. To achieve the stated purpose, the Guidelines will apply to all new construction and substantial building alterations that require approval by the Town of Berthoud Community Development staff in the Planning Department and Building Department. Incorporating these guidelines into a project's design will result in aesthetically pleasing and compatible landscaping in new developments, with plantings appropriate to the Colorado Front Range region's climate, soil, and environmental conditions.



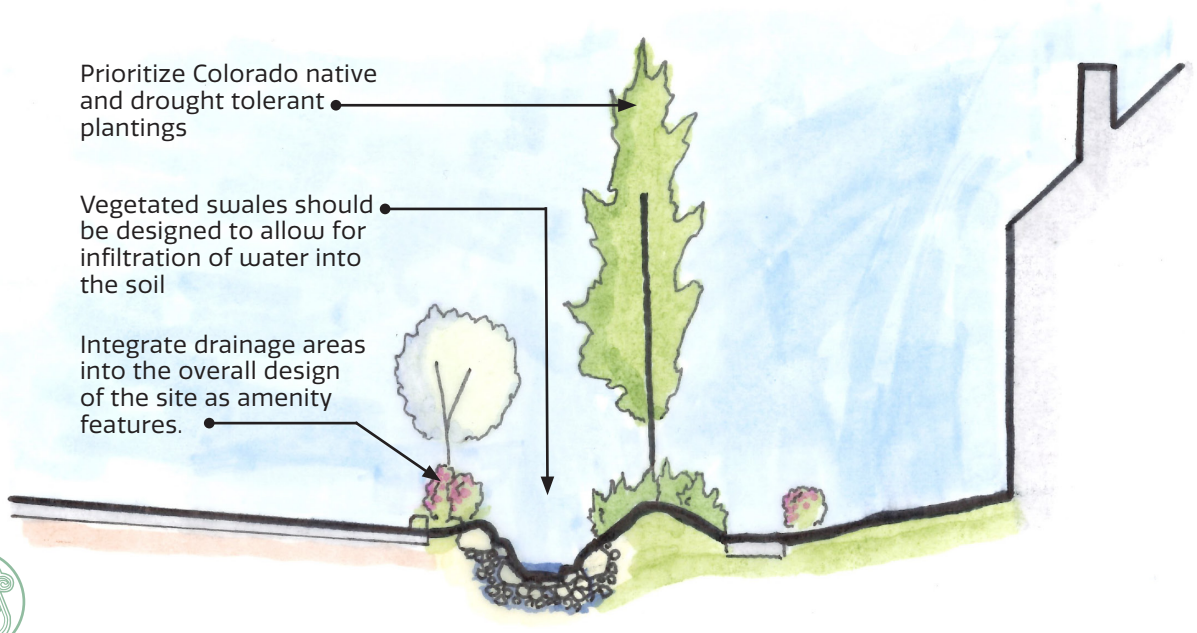
The objectives of these design guidelines are to:

a. Reflect the vision and policies set forth in the Town of Berthoud Comprehensive Plan.
b. Supplement landscape development standards found in the Town of Berthoud Municipal Code.
c. Maintain or improve property values.
d. Enhance the town's natural beauty, visual character, and climate resilience.
e. Encourage high-quality landscapes.
f. Facilitate a high level of resource conservation.
g. Provide designers and decision makers with a tool that is reflective of the town's Colorado climate landscape character and sense of place as the 'Garden Spot of Colorado'.

This section will incorporate overall landscape strategies to be implemented in all place types.

An ecology based stormwater management system is the baseline for creating a resilient and sustainable city. The core principles of these guidelines are to enhance landscape biodiversity, maximize water infiltration, and create a distributed network for stormwater management that is redundant and well connected.

1. Impervious surfaces should be kept to a minimum when not required by town.
2. Infiltration of water into the soil should be promoted by best practice grading and drainage design.
3. Permeable paving materials should be used to the extent practical in hardscaping areas like driveways and parking lots to recharge groundwater and reduce stormwater runoff.
4. Vegetated swales should be designed to allow for infiltration of water into the soil. Where practical, swales should be located along the edges of streets and along parkways.
5. Stormwater runoff should be diverted from impervious roofs and paths into permeable landscaping areas to increase water infiltration into the ground.
6. In areas with poor drainage, subsurface water storage or bioswales should be provided.
7. Drainage systems should be decentralized, to distribute storm water across the site instead of channelizing it.
8. Consider using multiple stormwater strategies (bioswales, permeable pavers, rain gardens) that cleanse water and increase infiltration.
9. Landscape designs should slow, spread and soak stormwater, allowing plants to filter stormwater instead of piping directly to retention ponds.



TOWN OF BERTHOUD

PLANT SELECTION DESIGN GUIDELINES

1. Plant selection should be specific to Berthoud's climate, in addition to site conditions such as location on site/exposure, light intensity, soil types, site drainage, and irrigation.
2. Plant selection should enhance the plants likelihood of becoming established and reduce potential disease, death, or maintenance.
3. Colorado native and drought tolerant species should be prioritized as much as possible.
4. Select plants that are beneficial to native pollinators and incorporate landscape features that provide habitat for native pollinators.
5. Plants and trees for a new development project should meet the following criteria:
   - 1.5" – 2" caliper or larger (for trees)
   - Shrubs should be in 5 gallon containers
   - Vines and Espaliers should come in 1 gallon containers or larger
   - Perennials and ornamental grasses should come in 1 gallon containers or larger
   - Ground cover should be in quart sized containers or larger
6. Street trees of the same species along the same street should be the same size and shape, and meet the following size criteria at the time of planting:
   - 1.5" – 2" caliper preferred, up to 5" maximum (for healthy establishment)
7. When replacing dead or dying trees, the size of the replacement tree should closely match the size of the trees next to it up to a 5" caliper.
8. The target percentage of low water use plants is eighty percent (80%). See master plant list.
9. Select plants that will contribute to winter color, texture, and form when possible to provide visual interest year round.
10. When using hardscape mulch (rock, gravel, cobble), design for seventy five percent (75%) living plant cover (full growth) for any planter or landscape area (includes tree lawns).

Town of Berthoud Facts –

- *Berthoud has been a part of the **Tree City USA** program since 1990*
- *Berthoud is nicknamed the **'Garden Spot of Colorado'** because of its abundance of trees, open space and sweeping mountain views*
- *In 2020, Berthoud passed resolution2020-01 with the sole purpose of protecting and supporting pollinators in town.*

1. Street side landscaping should present a unified design that adds to the built environment. The design should accentuate development entries with planting, monument signs, and lighting. (As needed in accordance with Berthoud's Dark Sky requirements.)
2. Landscape structures and features, hardscape, and site furnishings and fixtures should be designed as integral parts of the overall landscape concept, and they should be consistent or compatible with the neighborhood architectural style, scale, material, and finishes.
3. Where irrigation systems and/or plant materials can cause damage to sensitive building materials, a two- (2') to three- (3') foot space should be left between the outside building wall and adjacent landscaping elements to minimize damage to the building structure. This space should be filled with decorative hardscape materials.
4. Monoculture and/or plant palettes including five (5) or less species are discouraged.
5. Regionally sourced or manufactured landscape consruction materials, such as lumber, mulches, pavers, trees, shrubs, groundcover, and quarried gravel/cobbles/rocks or other hardscape materials, should be utilized where practical.
6. Permeable paving materials should be used where feasible.
7. Select street trees that are appropriate to their intended location and function.
8. Select drought tolerant, native landscaping to limit irrigation needs to conserve water, reduce storm-water runoff, and increase the capacity for groundwater recharge.
9. Use perennials, annuals, ornamental trees and ornamental grasses to accentuate gateway locations and special sites in town.
10. Hardscape materials and installation should meet the standard of care for all applicable professionals and should not result in an unsafe condition.
11. Enhanced paving materials should be provided at key focal points such as points of entry, pedestrian crossings, plazas, and other locations that warrant special visual emphasis.
12. Trees and shrubs should be located and spaced to allow for mature and long-term growth.
13. Trees should be selected on a performance basis with the objective of minimizing water use, providing shade, minimizing root intrusion, and providing color and contrast (see Master Plant List).

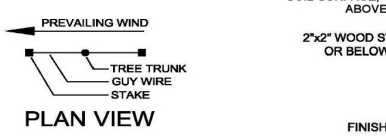
***Sustainability Tip** – A gas powered leaf blower emits nearly 300 times the amount of air pollution as a pick up truck. Replace your two stroke lawn equipment with battery powered options and reduce air pollution and help ozone levels.*

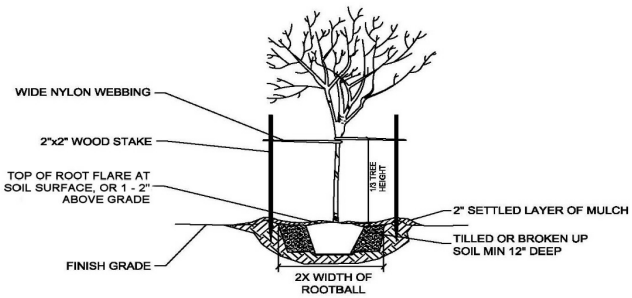
TOWN OF BERTHOUD

MAINTENANCE DESIGN GUIDELINES

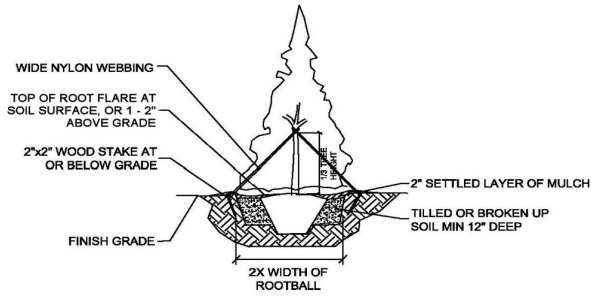
By following an ecology based strategy for landscape design, maintenance costs and effort can be reduced. When a landscape design mimics the naturally occurring ecosystem, the need for pest control and new planting is reduced.

1. Yard waste from landscaping maintenance should be collected and composted where possible. Organic materials that enter landfill contribute to climate change by releasing greenhouse gasses when decomposing in the anoxic conditions of a landfill. Conversely, organic material that is reincorporated into the soil increases soil carbon and nutrients available to plants.
2. When turf grass is used in landscaping, do not collect grass clippings and leaves that fall on the lawn. Instead, allow the organic material to break down and "feed" the soil. This will decrease the need for inorganic fertilizers and also recycle carbon as mentioned above.
3. All common area landscaping and trees will be maintained to keep plants in good condition.
4. Conduct soil analysis to determine if soil has poor organic or physical properties. Amend soil if necessary using compost or other renewable organic materials.
5. Stabilize stockpiled topsoil with native grass seed like buffalo grass during construction to prevent erosion, reduce dust, and protect microbial life.
6. Properly mulch newly planted trees and plantings and ensure they are adequately irrigated until established. Commitment to survival between 1–3 years, depending on the planting.
5. Property owners, HOA's, Metro Districts to replace dead, dying, damaged or diseased plant materials during the same growing season as the removal.
7. Diversity of plantings will decrease the cost and need for maintenance by leveraging beneficial ecosytem services like beneficial birds and insects as well as nutrient cycling.
8. When located within the pedestrian realm, always trim tree limbs and plantings to maintain pedestrian circulation. Locate rock mulch away from the pedestrian realm or contain within landscape to prevent spillage into pedestrian traffic.

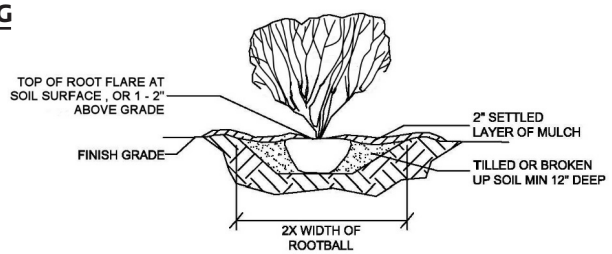




SMALL TREE PLANTING



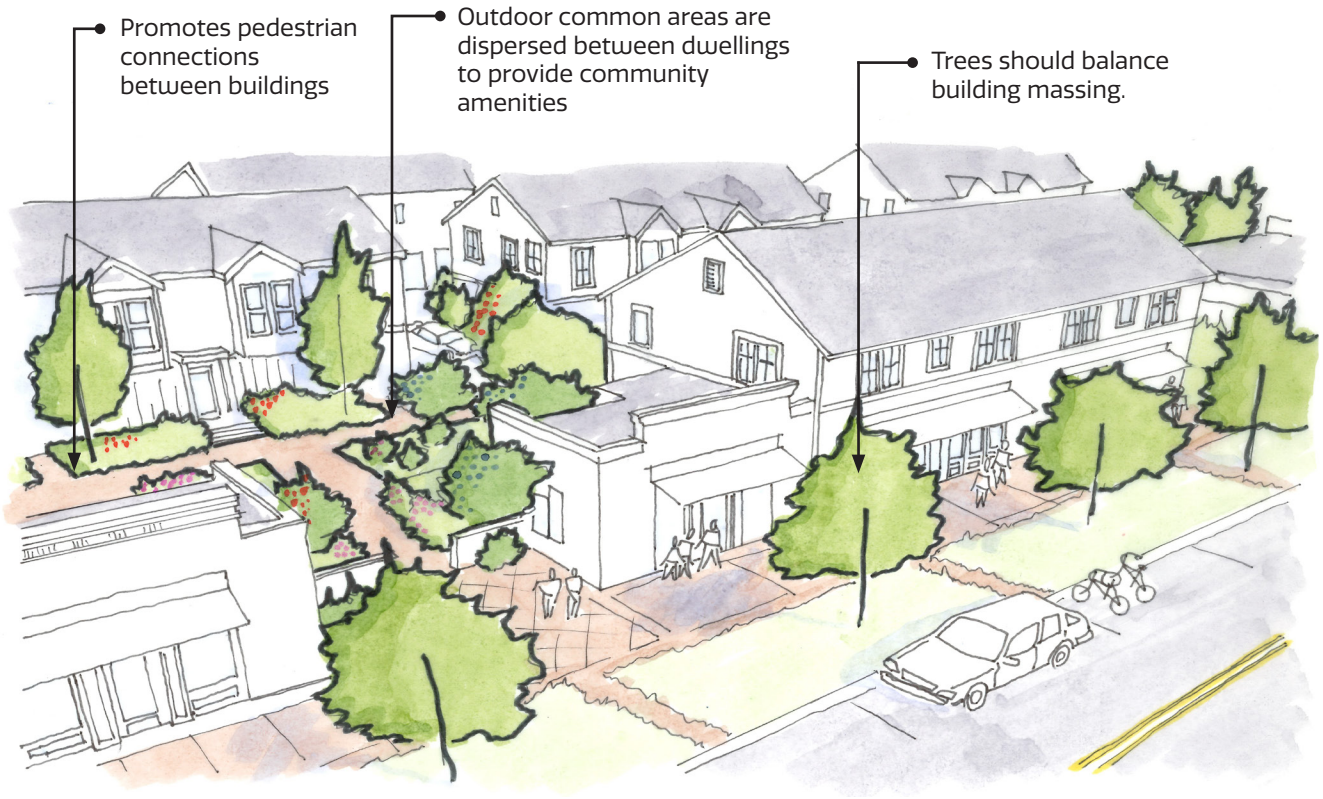
EVERGREEN TREE PLANTING



TYP. SHRUB PLANTING

The urban residential Landscape Design Guidelines apply to all new projects within the Urban Residential Character district.

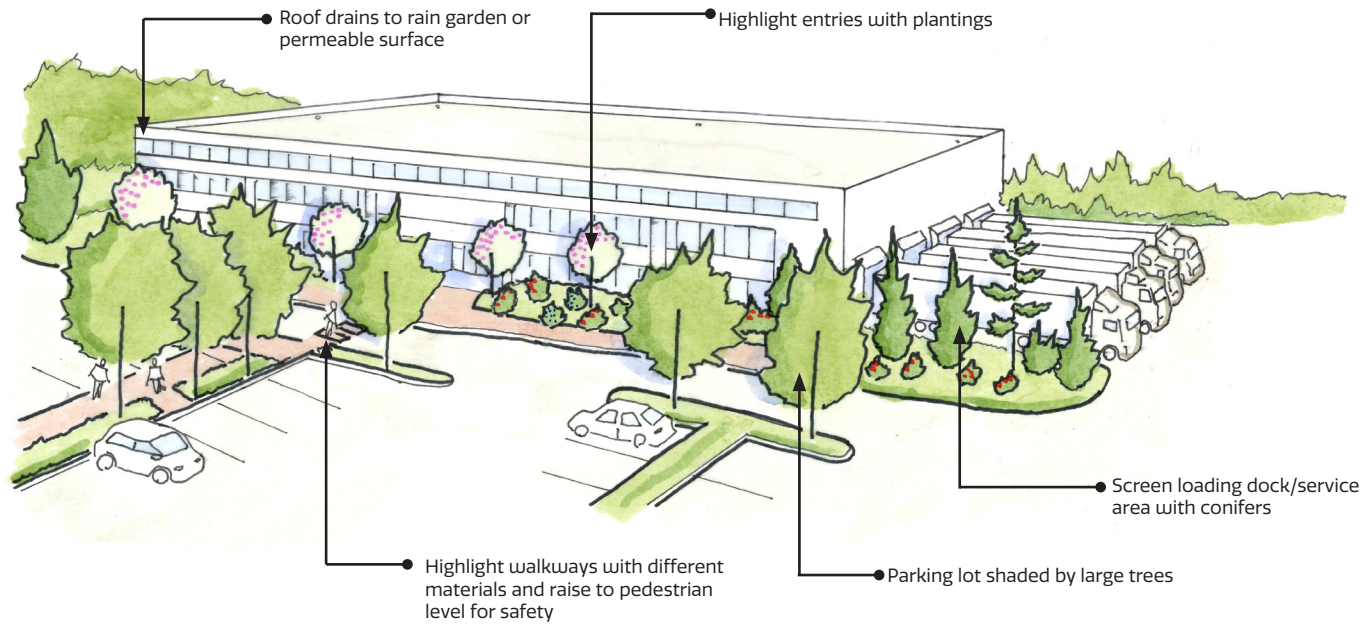
1. Landscape plans shall be prepared by a Colorado Licensed Landscape Architect for new development.
2. All landscaping in public and common use areas should be maintained to attractive conditions by the owner, HOA, or Metro District (whichever applies).
3. Landscaping should be provided in common use areas associated with urban residential development.
4. Trees should be selected with consideration to their size at maturity to balance building massing.
5. Landscape design should be pedestrian-centric, focusing on designing safe pedestrian-friendly, and comfortable environments with strong connectivity and sense of place.



6. Urban residential developments in which the majority of the dwelling units do not have ground level garden space, should set aside land for a community garden (or other community open space) sized at 1/8 acre per 50 dwellings.
7. Thoughtfully developed hardscape design should be integrated into the overall landscaping and may include decorative pedestrian pavements, site furnishings, and landscape features like sculptures, decorative planters, garden ornaments, arbors, trellises, screens, gazebos. These landscape elements should be compatible with the architectural character of the surrounding neighborhood.
8. Design common spaces to provide a sense of security derived from visibility from residential dwellings.
9. Common spaces should have clearly defined separation from vehicular areas to ensure pedestrian safety.
10. Turfgrass lawns should be limited for spaces for active and passive recreation for activities such as sports, games, and group events.

The following urban industrial landscape design guidelines apply to all new projects within the Urban Industrial Character District.

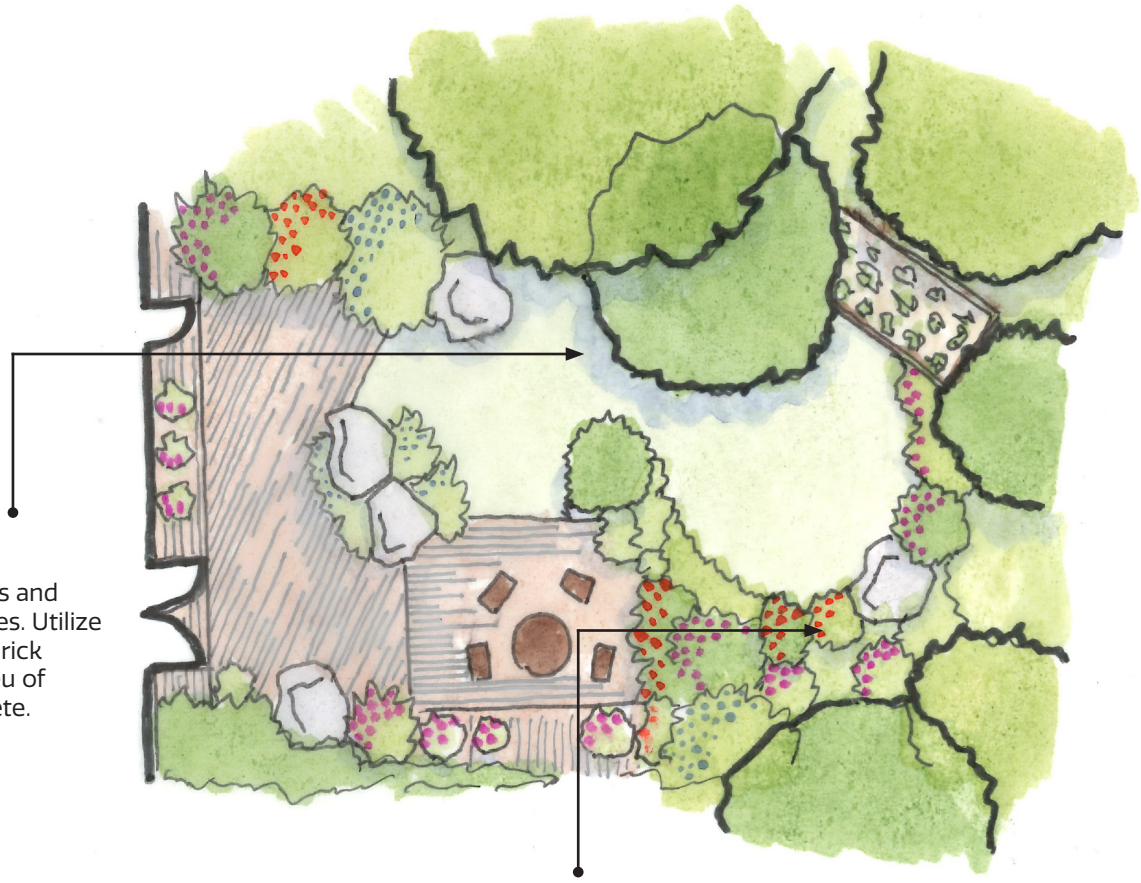
1. Landscape plans shall be prepared by a Colorado Licensed Landscape Architect for new development.
2. Landscaping should create an environment that softens the expanses of buildings and parking spaces. Landscaping elements include trees, shrubs, and ground cover at the base of buildings and to emphasize key architectural features.
3. Landscaping should be used to focus attention on entrances to buildings, shade parking lots, and screen loading and service areas.
4. Landscaping should be in scale with adjacent buildings and be of an appropriate size to accomplish its intended goals.
5. Vines and potted plants should be used, when necessary, to provide wall, column, and post texture and color, as well as to accentuate entryways, courtyards, and sidewalks.



6. Vertical landscape materials should be used to visibly reduce the size of large walls.

The following suburban and old town residential landscape design guidelines apply to all new projects within the Suburban Residential Character District and the Old Town Residential Character District.

1. All new land development applications except building permits for individual single family home residences should retain a licensed landscape architect to prepare landscape plans.
2. Residential homeowners are encouraged to retain a licensed landscape architect or licensed landscape contractor to prepare landscape plans.
3. Landscaping should include a variety of plant, tree, and groundcover species.
4. Front yard landscaping should visually integrate the adjacent natural landscape where possible.
5. Artificial turf should only be used in private backyards or for sports fields.



Minimize turf areas and impervious surfaces. Utilize raised desks and brick pavers patios in lieu of impervious concrete.

Mix medium height perennials for season color & plant species in groups

6. Dwellings should incorporate landscaping features to soften the transition between the home and the street.
7. Locate trees away from utility lines extending to the residence.
8. Turfgrass lawns are discouraged within single-family landscape areas except where adjacent to outdoor living areas such as patios.
9. Residential driveway pavement incorporating decorative material (e.g., pavers, bricks, and colored concrete) to break up and accentuate the surface is encouraged.
10. Permeable paving materials should be used where feasible.
11. Whenever possible, each front yard should have at least two ornamental trees on the property. Front yard trees should have mature sizes in scale with the massing and height of the residence. One tree should be located between 4'-5' of attached sidewalks, and within the tree lawn at detached side walks.

Correct ratio living plant material in rock beds

Incorrect ratio of living plant material within rock bed

The following urban downtown landscape design guidelines apply to all new projects within the Urban Downtown Character District.

1. Landscape plans shall be prepared by a Colorado Licensed Landscape Architect for new development.
2. Keep in mind that the conditions of various planting sites in the downtown area will vary and should be evaluated for individual landscape objectives and suitability to the specific street on which they are to be planted. The following guidelines should be followed:

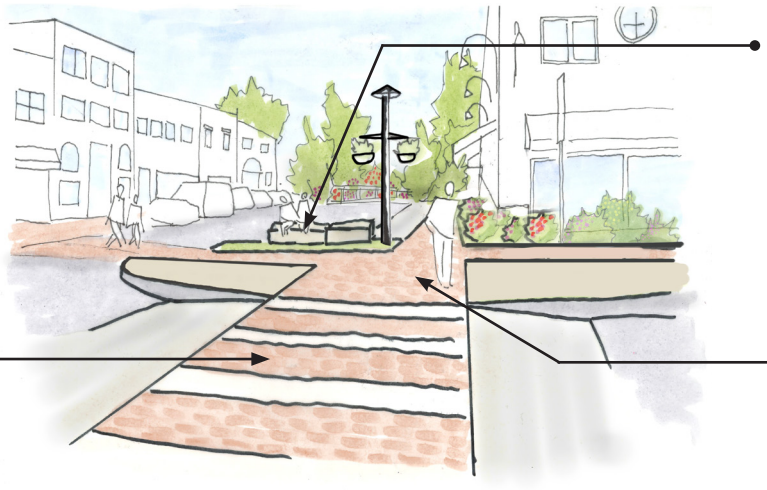
- Large trees should be located along wide right-of-way streets, and principal access streets such as along Mountain Ave.
- Large trees should also be used to highlight corners, to provide cover for large plazas, or as accents against the skyline.
- Ornamental trees should be used to provide seasonal color and a visual focal point for special locations such as a building entrance, corner areas, sitting areas, bus stops, or other significant areas or view corridors.
- Use of streetscape elements that define the urban palette are encouraged, including tree grates within sidewalk zone, benches and planters with durable materials, decorative paving to define special areas.
- Where tree grates are used they should be sized to accommodate tree growth, minimum 6' x 8'.
- When appropriate, use native grasses, paved areas, and ground covers within the design of a tree lawn.
- Street trees should be properly planted and maintained for health and growth. Replace diseased, damaged or dying trees immediately.

Correct placement and care of successful street tree

Incorrect upkeep of street tree replacement and maintenance

A. **Buffer zone**: plant street trees and use planters to protect the pedestrian path and separate walkways from the street.
B. **Pedestrian walkway**: provide adequate space for pedestrians and do not block with outdoor seating.
C. **Storefront zone**: activate storefront zone with plantings and seating

1. Landscaping must be incorporated in the design of pedestrian areas along the building fronts. Plantings for pedestrian areas should be designed with attention to color, texture and form. Use a variety of trees, shrubs, perennials, and ground covers. Provide seasonal plantings in planters, pots, hanging pots and beds to add color, beauty and variation.
2. New developments should provide for opportunities for the installation of art in landscaped areas and in front of buildings.
3. Do not use gravel or loose stone in place of ground cover in the curb zone
4. Consider maintenance with any improvement made within the right of way.

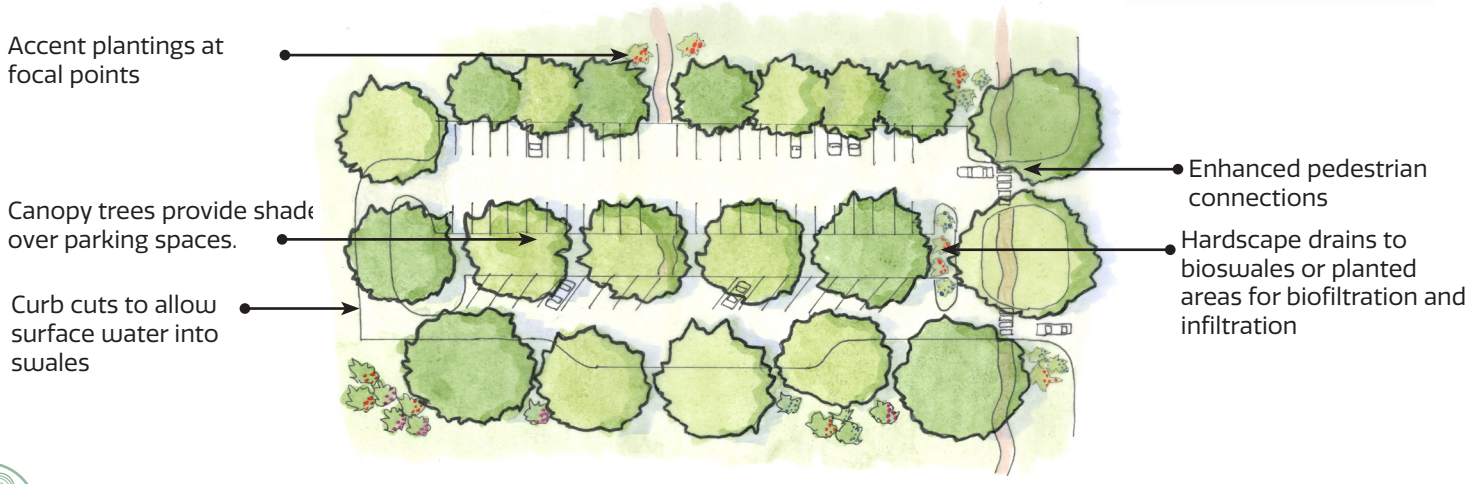


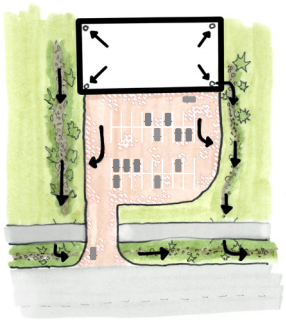
The following suburban commercial landscape design guidelines apply to all new projects within the Suburban Commercial District.

1. Landscape plans shall be prepared by a Colorado Licensed Landscape Architect for new development.
2. Landscapes should be designed to be low maintenance and compatible with the purpose of the facility.
3. Pedestrian connections should be utilized to create an open network of walkways, sidewalks, and trails throughout the commercial development.
4. The use of shade trees and shade structures may be used to diminish heat by providing shade in summer and allowing solar gain in winter to reduce dust, provide visual screening, and wind breaks.
5. Accent planting should be used around entryways and key focal points.
6. Vines and potted plants should be used to provide wall, column, and post texture and color, in addition to accentuating entryways, courtyards, and sidewalks.
7. Canopy trees should be used in parking lots to ensure shading of paved areas. Shade cover at maturity should meet or exceed fifteen percent (15%) of parking stall paved surfaces.
8. Pedestrian walkways should be provided in all parking areas.

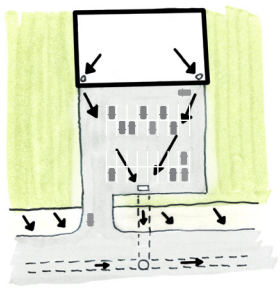
Parking Lot Landscape with Berms

Parking Lot Landscape with Shrubs



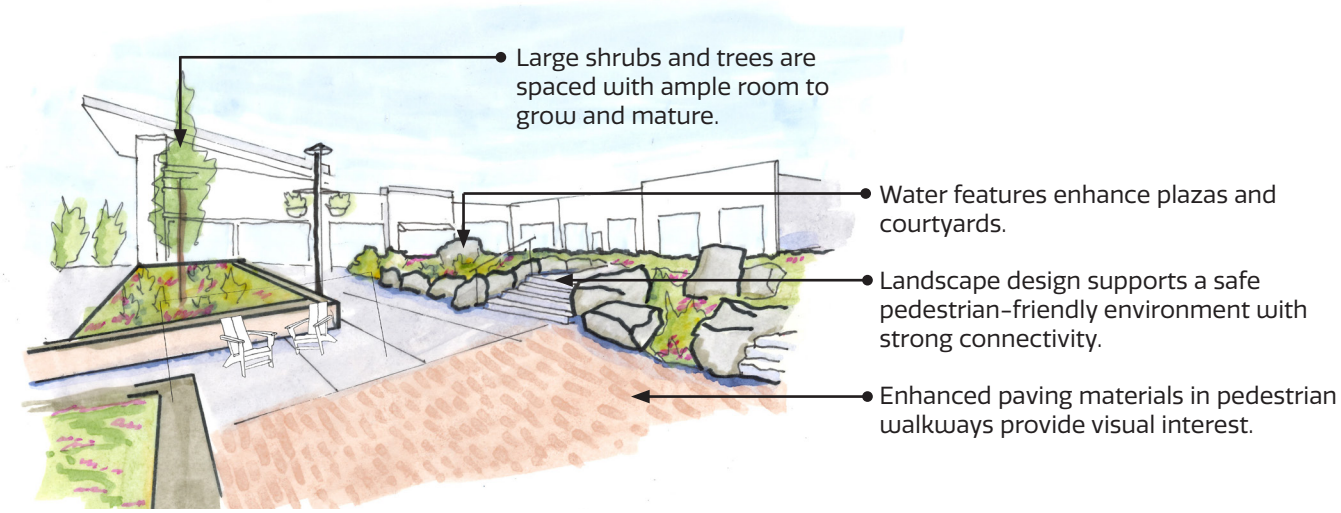


SURFACE DRAINS TO LANDSCAPE



SURFACE DRAINS TO INLET ONLY

9. Landscape design should be placed to support a safe pedestrian-friendly environment with strong connectivity.
10. The use of hardscape elements such as textured pavers, large ornamental flower pots, decorative walls, and water fountains are encouraged.
11. Water features may be considered with plantings and natural materials in courtyards and plazas.
12. Direct Water from parking lots, roof drains and other areas into landscape areas that could benefit from additional water and /or improve the quality of stormwater.



ENVIRONMENTALLY SENSITIVE AREAS

1. Provide a buffer zone from all environmentally sensitive areas adjacent development. Buffer to be maintained by the HOA or Metro District.
2. Identified environmentally sensitive areas and their buffers should be protected from disturbance unless necessary based on the following circumstances:

- Landscape improvements would protect and mitigate effects from adjacent development.
- Restoration of area is necessary based on existing conditions.
- Improvements are needed for public safety.
- Improvements are necessary and cannot be located elsewhere.
- Improvements include trails and public use areas designed to be compatible and complementary with the sensitive natural area.

Restoration of environmentally sensitive areas with compatible passive uses

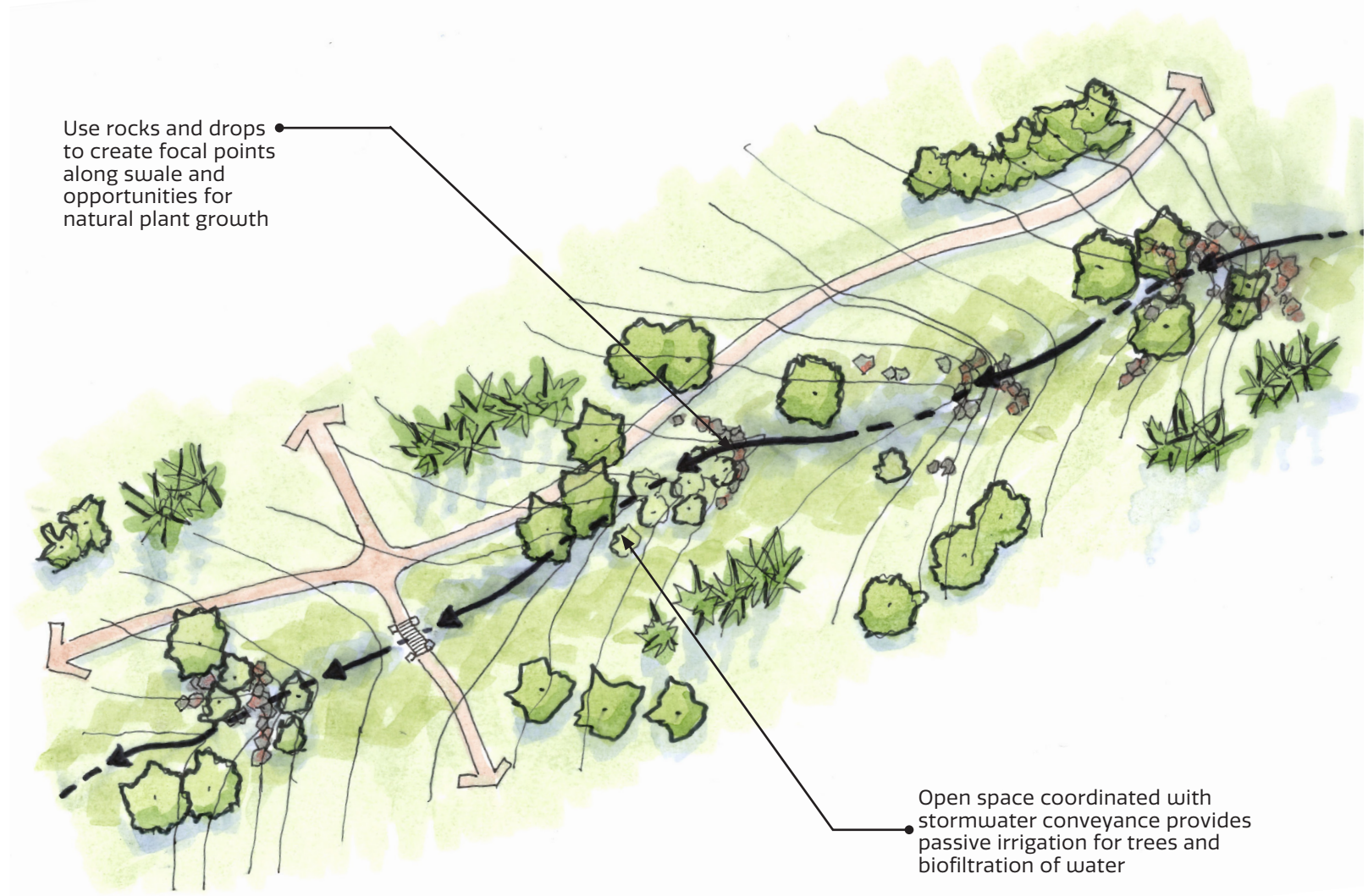
Wetland area with needed improvements to existing conditions

Water Saving Tips

- ***Don't water between 10 am and 6 pm. Instead, aim for watering at dawn or dusk to reduce evaporation and maximize water absorbed by plantings.***
- ***Set your lawnmower to the highest setting. Longer grass will keep the ground cooler and retain more water.***
- ***Minimize runoff by allowing for soak-time between short water cycles. For instance, water for 5 minutes, wait an hour, then water for 5 more minutes.***
- ***Consider looking into a rainwater collection system for lawn and garden watering, which not only cuts down on your costs but cuts out the energy cost associated with water from the treatment plant.***

OPEN SPACE

1. Provide open space as a transition between development parcels and natural areas.
2. Provide open space at trail corridors, drainage areas and as a relief from the built environment.
3. Plan open space areas with native or regionally adapted plant materials, primarily unirrigated after being established.
4. Trees, shrubs and grasses that are not expected to receive enough water through natural precipitation to be irrigated temporarily for the establishment of plant growth for up to 3 years. Once established, water as necessary based on seasonal conditions.
5. Coordinate open space with the design of storm water conveyance and water quality systems and allow for passive irrigation of plantings when possible.



PARKS, RECREATION AND TRAILS

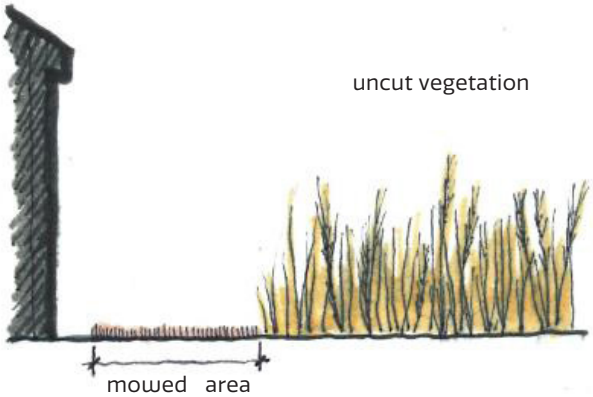
1. Design parks to serve the active and passive needs of people on-site and on nearby properties.
2. Amenities such as picnic shelters, playgrounds,amphitheaters, gardens, etc. should be appropriate to the project.
3. Reserve Irrigated turf grass for areas of parks subject to human activity.
4. Parks in residential areas:

- Provide more than 50% street frontage.
- At the discretion of the town staff, visibility and access from public trails or public properties (e.g. schools, civic buildings, etc.) may be an alternative to the street frontage requirement
- Types and locations of parks will be based upon accessibility to all residents; needs according to the Town of Berthoud; and classification according to who the park serves (e.g., Community Park, Neighborhood Park, Pocket Park, etc.).

5. Parks in commercial and mixed-use areas:

- Provide more than 25% street frontage.
- At the discretion of the town, visibility and access from public trails maybe an alternative to the street frontage requirements.
- Provide natural area transitions in parks where parks abut natural open space areas.

The Wildland Urban Interface (WUI) is the area where homes and the urban environment press against the wildland. Berthoud is included in the WUI for the Front Range of Colorado. Property owners are encouraged to protect their property and their community from wildfire. More resources can be found at https://csfs.colostate.edu/wildfire-mitigation



Multi-use path as fire break

LANDSCAPE WILDFIRE PREVENTION METHODS

1. Keep trees pruned and away from structures. Install hardscape at the base of trees.
2. Use fire-resistant plantings where possible to prevent spread. Firewise plantings are carefully spaced, low-growing and free of resins, oils and waxes that burn easily.
3. Practice good mowing techniques. Mow properties regularly, according to land use. Create fuel breaks from grassland open space areas to adjacent structures/communities by keeping a 10' boundary mowed from tall grasses. Use multiuse paths within open space areas as fire breaks by mowing each side to create the 10' firebreak.
4. Report overgrown vegetation in open space land to the Town of Berthoud Neighborhood Services Manager.
5. Establish defensible space zones around structures

- Zone 0 - Ember resistant zone (0-5 feet away from building and structures)
- Zone 1 - Lean clean and green zone (5-30 feet away from building and structures)
- Zone 2 - Fuel zone (30-100 feet away from buildings)

Well maintained landscape to prevent fire spread

Poorly maintained landscape for fire spread

PLANT SELECTION

The Master Plant List is a general guide to the plant species suitable for landscape use along the Front Range. In general, the Master Plant List is not intended to be a fixed and limiting list. Plants not found in the Master Plant List may be approved for use provided that they meet the criteria noted below. The licensed landscape architect will provide guidance material affirming compliance when selecting plants not on the list.

Due to the ever changing nature of the nursery trade, some plants on the Master Plant List will become unavailable and new species, cultivars, and hybrids will be introduced. New plants and other plants with desirable characteristics may be adopted, provided that they meet the criteria described above. Plant species may need to be erased from the Master Plant List in the future if they become susceptible to serious diseases and pests that are not currently known. An alternate up to date resource for plant selection can be found at https://plantselect.org/ and the town forestry website. Please contact the town forester to review suitability of trees not found within the given resources.

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Cacti and Succulents				
Coryphantha (Escobaria) missouriensis	Yellow Nipple Cactus	Full sun	Low	
Coryphantha (E.) vivipara	Pink Nipple Cactus	Full sun	Low	
Opuntia macrorhiza	Prickly Pear	Full sun	Low	
Yucca glauca	Plains Yucca	Full sun	Medium	

Plains Yucca, AKA Soapweed

- This plant is a very draught tolerant native species.
- It is the only host plant for the yucca moth.
- Plant Yuccas away from paths and walkways, as it's blue green leaves are very sharp
- In mid to late summer, it produces stalks of bell-shaped greenish white flowers.

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Groundcovers				
Antennaria parvifolia	Pussytoes (perennial)	Full sun	Low	
Callirhoe involucrata	Wine Cups (perennial)	Full sun	Low	
Erigeron divergens	Spreading Daisy (perennial)	Full sun	Low	
Eriogonum umbellatum	Sulphur Flower (perennial)	Full sun	Low	
Berberis repens (Mahonia repens)	Creeping Mahonia (shrub)	Full sun	Low	
Rhus trilobata 'Gro-Low'	Gro-Low Fragrant Sumac (shrub)	Partial Sun	Medium	
Arctostaphylos uva-ursi	Kinnikinnick	Full sun	Low	

Rabbitbrush

- This globe-shaped shrub is typically 2-6 feet wide, with silvery leaves and clusters of yellow flowers.
- It's deep root system allows this plant to thrive in dry climates.
- Consider planting with companion plants like russian sage, puple aster, or blue mist spirea.
- In the winter, Rabbitbrush sports fluffy seed clusters which add interest and texture to landscapes in the winter.

Shrubs				
Amelanchier alnifolia	Serviceberry	Sun/part shade	Low-med	
Amorpha canescens	Silvery Leadplant	Sun/part shade	Low	
Cercocarpus montanus	Mountain Mahogany	Sun/part shade	Low	
Ericameria nauseosa	Rubber Rabbitbrush	Sun	Low	
Fallugia paradoxa	Apache Plume	Sun/part shade	Low	

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Shrubs				
Prunus besseyi	Western Sandcherry	Sun/part shade	Low	
Ribes aureum	Golden Currant	Sun	Medium	
Ribes cereum	Wax Currant	Sun	Low	
Rhus glabra	Smooth Sumac	Sun/part shade	Low-med	
Rhus trilobata	Skunkbush Sumac	Sun	Low	
Rosa woodsii	Western Wild Rose	Sun/part shade	Low-med	
Symphoricarpos occidentalis	Snowberry	Sun/part shade	Low-med	

Jointfir AKA Mormon Tea

- This plant is extremely draught tolerant, and does not need aditional watering after it is established. This is due to it's tiny leaves, resulting in very little water lost through evapotraspiration.
- Jointfir keeps it's blue-green color through the winter, making it a great addition for year round visual interest.
- At maturity, this plant grows to 4-6ft high and 3-8ft wide.

Chamaebatiaria millefolium	Fernbush	Full sun	Low	
Chrysothamnus viscidiflorus	Yellow Rabbitbrush	Full sun	Low	
Cornus sericea	Redosier / Red Twig Dogwood	Full sun	Medium	
Crataegus phaenopyrum	Washington Hawthorn	Full sun	Medium	
Ephedra americana	Jointfir	Full sun	Low	

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Philadelphus lewisii	Mock Orange	Full sun	Low	
Physocarpus opulifolius	Ninebark	Full sun	Low	
Rhus trilobata	Three-leaf Sumac	Full sun	Low	

Swamp Milkweed

- As it's name implies, this milkweed thrives in wet environments. Look to this plant for the wet spot in your yard, or in a rain garden
- Like other milkweeds in Colorado, the flowers will attract various species of native bees and butterflies, and is a host plant for monarch butterfly caterpillars.
- At maturity, this plant grows to 3-5ft high

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Perennials				
Achillea lanulosa	Woolly Yarrow	Full sun	Low	
Adenolinum (linum) lewisii	Blue Flax	Full sun	Low	
Agastache cana	Double Bubblemint	Full sun	Low	
Amsonia jonesii	Jones' Bluestar	Full sun	Low	
Aquilegia chrysantha	Golden Columbine	Full sun	Low	
Artemisia frigida	Fringed Sagebrush	Full sun	Low	
Artemisia ludoviciana	Prairie Sage	Full sun	Low	
Asclepias incamata	Swamp Milkweed	Full sun	Medium	
Aster alpinus 'Goliath'	Goliath Alpine Aster	Full sun	Low	
Aster ascendens	Western Aster	Full sun	Low	
Aster ericoides	Many-fLowered Aster	Full sun	Medium	

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Aster falcatus	Rough white aster	Full sun	Medium	
Aster hesperius	Western Aster; Violet Aster	Full sun	High	
Aster porteri	Porter's Aster	Full sun	Low	
Baptisia australis	Blue Wild Indigo	Full sun	Low	
Berlandiera lyrata	Chocolate Flower	Full sun	Low	
Callirhoe involucrata	Poppy Mallow	Full sun	Low	
Centranthus ruber	Red Valerian	Full sun	Low	

Sunflower

- There are 5 sunflowers native to Colorado: common sunflower, Maximilian sunflower, Nuttall's sunflower, prairie sunflower, and the bush sunflower
- Sunflowers are among the easiest flowers to grow in Colorado, because they are tough and draught tolerant.
- The common sunflower can grow to 9ft tall.

Ceratostigma plumbaginoides	Plumbago	Full sun	Low	
Digitalis obscura	Sunset Foxglove	Full sun	Medium	
Engelmannia peristenia	Englemann Daisy	Full sun	Low	
Erigeron speciosus	Aspen Daisy	Full sun	Low	
Eriogonum umbellatum	Sulfur FLower	Full sun	Low	
Gaillardia aristata	Blanket FLower	Full sun	Low	
Gaura lindheimeri	Beeblossom	Full sun	Low	
Helianthus annuus	Annual SunFLower	Full sun	Low	

MASTER PLANT LIST

= Colorado Native Plant

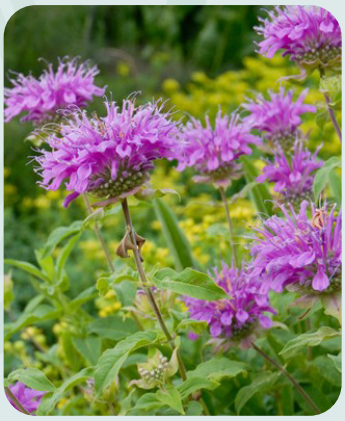
= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Hesperaloe parviflora	Red Yucca	Full sun	Low	
Lavandula angustifolia	English Lavender	Full sun	Low	
Liatris pycnostachya	Prairie Blazing Star	Full sun	Medium	
Liatris spicata	Prairie Gayfeather	Full sun	Low	
Lonicera spp.	Vining Honeysuckles	Full sun	Low	
Mirabilis multiflora	Four O'Clock	Full sun	Low	
Monarda fistulosa	Wild Bergamot	Full sun	Low	
Oenethera caespitosa	White Stemless Evening Primrose	Full sun	Low	
Oenothera macrocarpa	Evening Primrose	Full sun	Low	

Wild Bergamot AKA Native Lavender Bee Balm

- Wild bergamot is less colorful and showy than other cultivars of bee balm, but is more tolerant of dry conditions.
- In fall, its leaf color can be gold, red and yellow.
- This native perennial flower attracts bees and butterflies



Penstemon eatonii	Firecracker Beardtongue	Full sun	Low	
Penstemon grandiflorus	Large Beardtongue	Full sun	Low	
Penstemon pinifolius	Pine-leaf Beardtongue	Full sun	Low	
Penstemon	Desert Beardtongue	Full sun	Low	
Penstemon secundiflorus	One-sided Penstemon	Full sun	Low	

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Penstemon strictus	Rocky Mountain Penstemon	Partial Sun	Low	
Penstemon virens	Greenleaf Penstemon	Full sun	Low	
Penstemon virgatus	Tall One-Sided Penstemon	Partial Sun	Low	
Ratibida columnifera	Prairie ConefLower	Full sun	Low	
Ratibida pinnata	Pinnate Prairie ConefLower	Full sun	Low	
Rudbeckia hirta	Blackeyed Susan	Full sun	Medium	
Rudbeckia maxima	Great ConefLower	Full sun	Low	
Rudbeckia triloba	Brown-Eyed Susan	Full sun	Medium	
Salvia azurea var. grandiflora	Pitcher Sage	Full sun	Low	
Zauschneria latifolia var. arizonica	Hardy Hummingbird Trumpet	Full sun	Low	
Sphaeralcea coccinea	Scarlet Globemallow	Full sun	Low	
Salvia azurea	Pitcher Sage	Partial Sun	Low	
Monarda fistulosa	Bee Balm/ Horsemint	Full sun	Low	
Helianthus pumilus	Bush Sunflower	Full sun	Low	
Dalea purpurea	Purple Prairie Clover	Full sun	Low	
Solidago canadensis	Canada Goldenrod	Full sun	Medium	

Prairie Coneflower

- Prairie coneflower is a native, drought-tolerant wildflower of the Great Plains.
- This short-lived plant reseeds readily. Since it normally grows in open patches in grasslands and mountain foothills, it is a great choice for mixing with native grasses or a naturalistic landscape.

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Grasses				
Bouteloua gracilis	Blue Grama	Full sun	Low	
Bouteloua gracilis 'Blonde Ambition'	Blonde Ambition Blue Grama	Full sun	Low	
Muhlenbergia reverchonii	Undaunted Ruby Muhly Grass	Full sun	Low	
Orzyopsis hymenoides	Indian Ricegrass	Full sun	Low	
Bouteloua curtipendula	Side-Oats Grama	Full sun	Low	

Blue Grama

- The official state grass of Colorado, this grass has distinctive seed heads which make it easy to identify.
- Blue Grama can be used as a lawn, but does not tolerate heavy foot traffic well. It uses about 1/3 of the water required by traditional turf, making it a water wise alternative alrenative.
- This grass is critical to the shortgrass prairie ecosystem encompasing Berthoud due to it's extensive root network that hold down soil.

Trees				
Crataegus crus-galli 'Inermis'	Inermis' Cockspur Hawthorn	Full sun	Low	
Crataegus x mordenensis 'Toba'	Toba Hawthorn	Full sun	Low	
Gleditsia triacanthos f. inermis 'Imperial'	Imperial Honeylocust	Full sun	Low	
Gleditsia triacanthos f. inermis 'Skyline'	Skyline Honeylocust	Full sun	Low	
Juniperus chinensis	Chinese Juniper	Full sun	Low	
Juniperus scopulorum	Rocky Mountain Juniper	Partial Sun	Low	

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Picea pungens	Colorado Spruce	Full sun	Medium	
Quercus alba	White Oak	Full sun	Medium	
Quercus bicolor	Swamp White Oak	Full sun	Medium	
Quercus rubra	Red Oak	Full sun	Medium	
Quercus shumardii	Shumard Oak	Full sun	Low	
Quercus macrocarpa	Bur Oak	Full sun	Low	
Quercus muehlenbergii	Chinkapin Oak	Full sun	Low	
Quercus robur	English Oak	Full sun	Medium	
Quercus shumardii	Shumard Oak	Full sun	Low	
Quercus gambelii	Gambel Oak	Partial Sun	Low	
Sophora japonica	Japanese Pagoda Tree	Full sun	Medium	
Tilia cordata	Littleleaf Linden	Full sun	Medium	
Syringa reticulata	Japanese Tree Lilac	Full sun	Low	
Pinus • edulis • flexis • heldreichii • mugo • nigra • strobiformis	· 'Pinyon pine' · 'Limber pine' · 'Bosnian pine' · 'Mugo pine' · 'Austrian pine'	· Full sun · Full sun · Full sun · Full sun · Full sun · Full sun	Low-Med Low-Med Medium Low-Med Medium Low-Med	

Ponderosa Pine

- This majestic tree is well adapted to high temperatures and low moisture and is highly resistant to low-intensity fire.
- A long taproot helps the drought-resistant pine obtain adequate moisture and also decreases its chances of being uprooted by strong winds.
- Scientists don't know why, but older ponderosa pines smell like butterscotch!

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Tilia americana	American Basswood	Full sun	Medium	
Tilia amurensis	Linden	Full sun	Low	
Tilia tomentosa	Silver Linden	Full sun	Medium	
Tilia x flavescens 'Glenleven'	Glenleven Linden	Full sun	High	
Prunus virginiana 'Shubert'	Canada Red Chokecherry	Full sun	Low	
Pinus ponderosa	Ponderosa Pine	Full Sun	Low	
Acer glabrum	Rocky Mountain Maple	Full sun	Medium	
Populus Deltoides Monilifera	Plains Cottonwood	Full Sun	High	

Plains Cottonwood

- Adapted to Colorado's eastern plains, this is the largest native broadleaf tree in the state.
- One of the most ecologically and culturally significant trees in Colorado, it thrives in riperian zones.
- Cottonwoods reduce erosion, capture and filter sediment, and increase water infiltration.

*** Appropriate in natural corridors and private open space, requires approval from town forester.**

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Acer tataricum	Tartarian Maple	Full sun	Low-Med	
Acer grandidentatum	Big Tooth Maple	Full sun	Low-Med	
Aesculus arguta	Texas Buckeye	Full sun	Low-Med	
Aesculus glabra	Ohio Buckeye	Full sun	Medium	
Amelanchier alnifolia	Saskatoon Serviceberry	Full sun	Low-Med	
Amelanchier canadensis	Shadblow Serviceberry	Full sun/ Light shade	Low-Med	
Catalpa Sp.	Catalpa	Full sun	Low-Med	
Celtis occidentalis	Hackberry	Full sun	Low-Med	
Cercis canadensis	Eastern redbud		High	
Crataegus · ambigua · phaenopyrum · viridis	· Russian · Washington · Green	· Full sun · Full sun · Full sun	· Low · Med · Low-Med	
Ginko biloba (Male trees)	Ginko tree	Full sun	Med	
Gymnocladus dioicus	Kentucky Coffeetree	Full sun	Low-Med	
Malus 'Spring Snow'	Spring snow crabapple	Full sun	Low-Med	
Prunus padus	European Birdcherry	Full sun	Medium	
Prunus virginiana	Sucker Punch Canada Red	Full sun	Low-Med	
Pyrus calleryana	'Chanticleer', 'Cleveland Select', 'Capital', 'Redspire'	Full sun	Low-Med	
Ulmus • americana • davidiana	• "ValleyForge-Triumph" • David Elm	· Full sun · Full sun	Low-Med	
Abies concolor	White fir	Full sun	Med	

PROHIBITED LIST

Trees Prohibited in Town of Berthoud right of ways or on public lands.

Scientific Name	Common Name
Fraxinus spp.	Any Ash species- Due to EAB presence in northern front range
Populus spp.	Any Poplar species- Cottonwood, Aspen, Silver Poplar, Lombardy Poplar
Salix spp.	Any Willow species
Acer negundo	Box Elder Tree *does not include Sensation Boxelder
Ulmus pumila	Siberian (Chinese) Elm
Robinia pseudoacacia	Purple Locust/ Black Locust
Morus alba	Mulberry
Pyrus calleryana 'Bradford'	Bradford Pear
Juglans nigra	Black Walnut
Elaeagnus angustifolia	Russian Olive
Ailanthus altissima	Tree of Heaven
Tamarix spp.	Tamarisk (Salt Cedar)
Acer Rubrum	Red Maple
Acer saccharinum	Silver Maple
Acer x freemanii	Freeman Maple (Autumn Blaze Maple)
Betula spp.	Birch
Any weeping or pendulous tree type eg., Weeping birch	
Any shrub or hedge which by its habit of growth would obstruct, restrict, or conflict with necessary and safe use of the public rights-of-way.	
Conifers or evergreens which would eventually grow over the sidewalks or streets.	
Pod producing Honeylocust	

Colorado Noxious Weeds

Noxious weeds threaten valuable wildlife habitat and natural resources, cause economic hardships to agricultural producers, and are a nuisance for recreational activities. The Noxious Weed Act requires all Colorado residents to control noxious weeds using integrated methods to manage noxious weeds if the same is likely to be materially damaging to the land of neighboring landowners.

Find a list of Colorado Noxious Weeds here : Noxious Weed List

or go to https://ag.colorado.gov/conservation/noxious-weeds/species-id

APPENDIX

MAINTENANCE PLANS

All property owners/occupants of residential, mixed use, commercial, or industrial property with a site-specific development plan such as a Site Plan or Use by Special Review are responsible for the maintenance and replacement of landscaping as shown on that approved plan. The below maintenance checklist should be used to establish a landscape maintenance plan, to be submitted to the Town of Berthoud for review.

Introduction

- Provide a description of the development and the area of coverage.
- Provide contact information for specific questions or concerns (names, phone numbers and hours of operation).

Plant Material

- Provide direction on pruning and trimming of plant material.
- Provide direction for establishment of native grasses and seeded areas. Include information about mowing frequency based on season. If shrub beds are within seeded areas, provide direction to mow and trim to maintain visibility. If grasses are within areas used for fire breaks, provide direction on height and frequency of mowing.
- Provide direction for watering in irrigated areas throughout the year. Use season specific standards for winter watering and growing season watering to ensure that plants get the proper amount of water throughout the year.
- Provide direction on fertilization of trees and shrubs. Include information about when to fertilize and the fertilization process.

Mulch

- Provide direction on maintenance for all mulch beds to ensure that the standard depth remains constant and per specifications.
- Provide direction on water required to establish native grasses

Irrigation Systems

- Provide information on monitoring and repairs to irrigation systems. Inlcude start up (spring start up procedures) and shut down (winterization procedures) as well as weekly, monthly and yearly maintenance instructions. Include contact for reporting all problems with system and maintenance of the systems.

Landscape Maintenace Schedule

- Provide a general monthly checklist for landscape maintenance for each month of the year.

APPENDIX

SAMPLE MAINTENANCE PLAN

Project Name
Maintenance Manual

TABLE OF CONTENTS

APPENDIX

SAMPLE MAINTENANCE PLAN

PLANT MATERIAL

Pruning/Trimming:

1) In general, prune or trim shrubs and trees just after their flowering period and only as necessary. No shearing is allowed. Remove any dead or dying branches. Notify Contact Name of any tree pruning needs observed during regular maintenance. Tree pruning will be done by either the _____ or by a certified arborist employed by _____, under the direction of and with prior consent from _____. Pruning of all shrubs will be completed by _____, at appropriate times determined by them.

2) Make all cuts clean; keep saws and pruners sharp.

3) Pruning will take place as needed to prune all dead, diseased, or injured branches.

Native Grass Seeded Areas:

1) Native grass areas will be mowed 2 times per growing season or as needed to help control weeds. All bare areas will be touch up seeded in spring or fall seeding windows.

2) For shrub beds within native seed area, mow or trim as necessary to maintain visibility of shrubs and keep grass from overshadowing view of shrubs.

3) Irrigate native seeded areas for 2 years (or until established). Once established, water as necessary based on seasonal conditions.

Watering in Irrigated Areas during Winter Months:

1) Winter watering is extremely important and should take place monthly or more when there are periods of dry, warm weather or heavy winds. Deep root watering on all trees is also a good practice. Trees planted on the project shall be watered once per month or more at the rate of 30 gallons per tree for the months of November through April until the Landscape Establishment period ends. Shrubs planted on the project shall be watered at the rate of 10 gallons per shrub for the months of November through April. Winter watering will be completed for both years of the maintenance plan requirement.

2) It is better to water heavily a fewer number of times than to water lightly a greater number of times. Over-watering is a major cause of problems in plant material and is much more difficult to correct than under-watering.

3) Check soil moisture as often as possible, specifically during periods of prolonged dry/windy weather and especially when there is no snow cover, to determine water needs of the plant. The soil should be moist, not wet.

4) Winter watering frequency shall be adjusted based upon amount of snowfall and frozen conditions/warm, windy conditions.

Watering Irrigated Areas during Growing Season Months:

1) Do not over-water plantings. Drip systems should be left on for enough time to saturate the root zone. Avoid multiple start times with Drip system. Do not allow run-off from the Drip system. The trees will need to receive 30-40 gallons of water per week where as shrubs will receive 6-10 gallons per week.

APPENDIX

SAMPLE MAINTENANCE PLAN

Fertilizing Trees and Shrubs:

1) All plant material should be fertilized each spring with a well-balanced, slow release synthetic or organic fertilizer in early spring.

2) Granular slow release fertilization will be of 5-5-5 formulation or similar, applied per label directions. Hand water immediately after fertilizing to force fertilizer into soil and wash any fertilizer from plant surfaces.

Weed, Insect and Disease Management:

An Integrated Pest Management (IPM), approach will be used to control pests, weeds, insects and diseases. The IPM program coordinates long-term prevention or suppression of pest problems to minimize impacts to human health, the environment, and non-target organisms.

Pesticides are to be used as a last resort after exhausting all other options. If pesticides are used they must be chosen from the list of products that have been reviewed, evaluated and approved by the IPM Subcommittee.

Weeds in planting beds will be removed on a weekly basis as the weeds emerge. Dispose of all weeds off site. Regular maintenance of the mulch layer will help minimize weeds in the planting beds. If herbicides must be used, they are to be chosen from the list approved by the IPM subcommittee. Use the least toxic herbicide available and spot apply on weeds.

Plant material deemed dead or irreparably damaged will be removed and replaced each month and within 30 days of notification with healthy, like plant materials.

Warranty plants shall not be installed during the summer months (June, July and August)

General IPM Steps and Methods:

1) Prevention first: Follow accepted maintenance practices (correct watering, mulching, pruning, etc).

2) Indentify the pest life cycle and characteristics.

3) Set action thresholds – tolerate minimum damage.

4) Monitor regularly and include any findings in project log.

5) When pests exceed threshold, use control methods with the least non-target impacts. “Know the Pest” by treating it when it is in its most vulnerable state and when its natural enemies are in their least susceptible state.

6) Keep records in the project log of control methods and results.

APPENDIX

SAMPLE MAINTENANCE PLAN

Wrapping/Staking:

1) All deciduous trees should be wrapped by November 1st – 15th of the year they are planted. Specific tree wrap will be cut in a continuous strip of sufficient length to wrap tree. Wrap from soil surface to the first branch of each tree. Wrap with over-lapping wraps of 1.5". Secure wrapping with wrapping tape and do not use electrical tape or string. Deciduous trees should be wrapped for the first four to five years after planting. Wrapping shall be removed between April 1st – 15th of the following spring.

2) Remove stakes after the second full growing season, depending on the type of tree, root growth and wind at the site.

WOOD MULCH

Check the depth of Wood Mulch during maintenance activities. Add additional mulch in areas that have decayed or have thinned out over time. All mulch beds will be kept at the depth specified in the specifications.

AUTOMATIC IRRIGATION SYSTEM

Start-up, Shut-down and weekly operations will be coordinated with . If a problem has been identified with the irrigation system notify and will proceed in troubleshooting and fixing the problem.

Monitor the moisture levels around all plant material. Report problems, including browning or oversaturation, to . Recommend necessary adjustments and then coordinate with the owner rep to alleviate the problem. Control all irrigation systems, including clock settings. Fix any leaks or other problems with the material installed on this project. Any repair work to be coordinated with owner rep.

Provide the following maintenance items/extra stock to the owner rep prior to final acceptance:

1) 2 sets of special tools required for removing, disassembling and adjusting each type of sprinkler head and valve supplied on this project.

2) Two 6-foot valve keys for operation of gate valves or stop and waste valves (if applicable).

3) 2 keys for each automatic controller.

4) 2 quick coupler keys and 2 matching hose swivels for each type of quick coupling valve installed.

5) 2 aluminum drain valve keys of sufficient length for operation of drain valves.

6) 4 Rotor heads of each type used.

7) 100' of Inline Emitter Tubing of each type used.

APPENDIX

SAMPLE MAINTENANCE PLAN

Spring Start–up Procedures: Coordinate with owner rep at site to be on hand during start–up procedures.

1) Run through the zones attached to the project to test for any winter damage.

2) Set programs for watering frequency and duration of the project zones in coordination with the owner rep. Run through clock to ensure a working system.

3) Verify that all drip emitters are functioning properly. Repair if needed.

Weekly Maintenance:

1) Inspect valves and Drip system weekly for any damage or leaks. Any repairs made shall be made with materials of the same manufacturer and model as the original equipment.

2) Check for dry or oversaturation of planting areas and coordinate with owner rep to make changes.

3) Clean up: Continuous clean up operations will be performed throughout the duration of the work. Remove rubbish from site on at least a weekly basis, or when on site for other maintenance tasks.

4) Trench settling will be repaired and re-seeded if it occurs.

Monthly Maintenance:

1) All weekly procedures.

2) Coordinate with owner rep to adjust times on controller to compensate for different temperatures and precipitation each month.

3) Run through controller to assure proper working condition for project zones.

Yearly Maintenance:

1) All monthly procedures.

2) Inspect all components (valves, Drip pipe, etc.) to assure proper working condition.

3) Flush Drip pipes once per year to remove any possible sediment.

4) "Start-up" and "winterize" system (see detailed explanations below). Coordinate with owner rep.

APPENDIX

SAMPLE MAINTENANCE PLAN

Winterization Procedures: Coordinate with owner rep at site to be on hand during winterization procedures.

1) Close the main supply.

2) Connect air compressor to the service tee located on the vacuum breaker.

3) Turn controller to station #1 and start compressor.

4) Force air through station #1 until all water has been blown out. Continue process through stations #2, #3, etc., until all stations have been blown out completely (a minimum of 3 minutes).

5) Open all drain valves and petcocks on the vacuum breaker.

6) Turn off controller, but allow to run so that lubricants stay on clock motors.

General Notes:

1) It is important to repair any malfunctioning equipment as soon as possible especially during the hot mid-summer months.

2) Check for spots that appear to be dry. The sooner these are corrected, the less damage there will be.

3) Time of year and conditions will affect watering times. A base time of 35 to 50 minutes shall be used for Drip zones. The trees require 30 to 40 gallons of water per week where as shrubs will require 6-10 gallons of water per week. These times are averages only and will vary depending on time of season, plant material type, wind conditions and soil conditions.

APPENDIX

SAMPLE MAINTENANCE PLAN

GENERAL MONTHLY CHECKLIST

As Needed Items
- Tree pruning needs for dead or damaged limbs.
- Trash removal

January
- Winter water

February
- Winter water

March
- Winter water

April
- Remove tree wrap
- Activate and troubleshoot sprinkler system
- Remove weeds as needed
- Re-mulch beds as needed
- Remove weeds

May
- Fertilize trees and shrubs
- Re-mulch beds as needed
- Inspect sprinkler system operation/adjust timing as needed
- Prune trees and shrubs as needed
- Remove weeds

June
- Check all trees and shrubs for insect pests
- Inspect sprinkler system operations/adjust timing as needed
- Remove weeds
- Re-mulch beds as needed

July
- Inspect sprinkler system operation/adjust timing as needed
- Remove weeds
- Re-mulch beds as needed

August
- Inspect sprinkler system operation/adjust timing as needed
- Remove weeds
- Re-mulch beds as needed

September
- Inspect sprinkler system operation/adjust timing as needed
- Remove weeds
- Re-mulch beds as needed

October
- Adjust staking of new trees
- Reduce watering times on sprinkler system
- Remove weeds

November
- Wrap trees
- Winterize irrigation sprinkler system
- Winter water

December
- Winter water

APPENDIX

SAMPLE MAINTENANCE PLAN

LANDSCAPE MAINTENANCE SCHEDULE 2015–2017

Routine – Quantities Based On Times Per 1 Year	**Jan '16-'17**	**Feb '16-'17**	**Mar '16-'17**	**Apr '16-'17**	**May '16-'17**	**Jun '15-'16**	**Jul '15-'16**	**Aug '15-'16**	**Sep '15-'16**	**Oct '15-'16**	**Nov '15-'16**	**Dec '15-'16**	**Tot For 2 Yr Maint Period**
Shrub Monitoring	0	0	1	1	1	1	1	1	1	1	0	0	16
Tree Monitoring	0	0	1	1	1	1	1	1	1	1	0	0	16
Weed Beds	0	0	2	2	2	2	2	2	2	2	0	0	32
Trash Removal	2	2	2	2	2	2	2	2	2	2	2	2	48
Irrigation Inspection	0	0	4	4	4	4	4	4	4	4	0	0	64
Spring/Fall													
Spring Clean-up	0	0	0	1	0	0	0	0	0	0	0	0	2
Fall Clean-up	0	0	0	0	0	0	0	0	0	1	0	0	2
Irrigation Start-up	0	0	0	1	0	0	0	0	0	0	0	0	2
Winterization	0	0	0	0	0	0	0	0	0	1	0	0	2
Check Stake Guys	0	0	0	0	0	0	0	0	0	1	0	0	2
Plant Material Care													
Pruning (as needed)													
Tree Wrap	0	0	0	0	0	0	0	0	0	1	0	0	2
Wrap Removal	0	0	0	1	0	0	0	0	0	0	0	0	2
Fertilization	0	0	0	1	0	0	0	0	0	0	0	0	2
Herbicide/Pesticide as needed													
Winter Services													
Winter Water	1	1	1	0	0	0	0	0	0	0	1	1	10
Winter Watering could increase or decrease due to weather conditions													

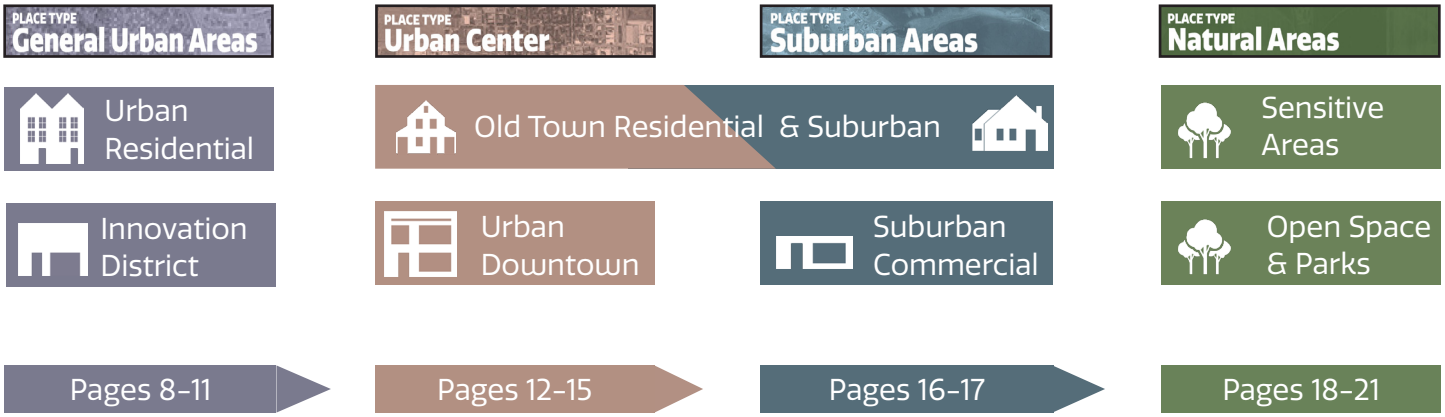
LANDSCAPE DESIGN GUIDELINES

PLACE TYPES

TOWN OF BERTHOUD DESIGN GUIDELINES

INTRODUCTION

These guidelines provide expectations regarding landscaped spaces in new development as well as information for use in the renovation of existing landscaped areas. These guidelines are organized to communicate town-wide requirements for plant selection and maintenance. Additional specific guidelines for the following character districts found in the Berthoud Comprehensive Plan update are included.



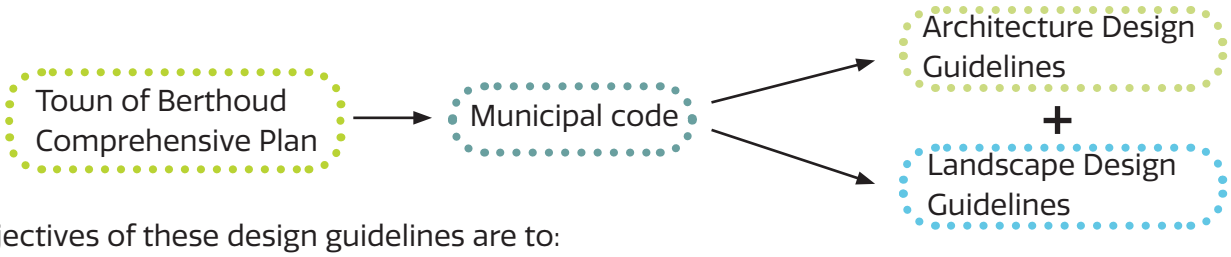
Organization:
Within each section are a number of design principles and measures that address the different elements of landscape design and environmental sensitivity based on land use. Each section of the town wide Design Guidelines will cover over arching objectives (e.g., planting, maintenance, water use etc) based on place types.

Guidelines that promote water wise and sustainable practices are designated by the water wise leaf symbol.

How To Use the Guidelines:
Property owners, developers, designers, and contractors proposing new development in Berthoud should first review the zoning of the property being developed and familiarize themselves with the Berthoud Municipal Code. They should then proceed to the most recent **Berthoud Comprehensive Plan Update**, the **Berthoud Municipal Code (Landscape Design 30-2-112)**, adopted master plans affecting the property, and finally, these **Landscape Design Guidelines**. The provisions set forth in this document identify the desired level of planting and design quality for all development; however, flexibility is necessary and encouraged to achieve excellent design. Each application for development should demonstrate to what extent it incorporates these guidelines. Applications that do not meet specific guidelines applicable to that project should provide rationale for the design and explain how the project will meet the **intent** of the Comprehensive Plan, the Municipal Code, and these Guidelines. Whether the design intent is justified will be determined through Planning Department review. Appeals to Planning Department decisions will be made to the Planning Commission.

How the Guidelines are Applied:

The Landscape Guidelines are intended for the Planning Department, as well as other town agencies and department staff, developers, architects, engineers, and community members to use in processing and evaluating project designs and applications together with relevant policies from the **Berthoud Comprehensive Plan as amended,** the **Berthoud Municipal Code (Landscape Design 30-2-112)**, and finally, these **Landscape Design Guidelines**. To achieve the stated purpose, the Guidelines will apply to all new construction and substantial building alterations that require approval by the Town of Berthoud Community Development staff in the Planning Department and Building Department. Incorporating these guidelines into a project's design will result in aesthetically pleasing and compatible landscaping in new developments, with plantings appropriate to the Colorado Front Range region's climate, soil, and environmental conditions.



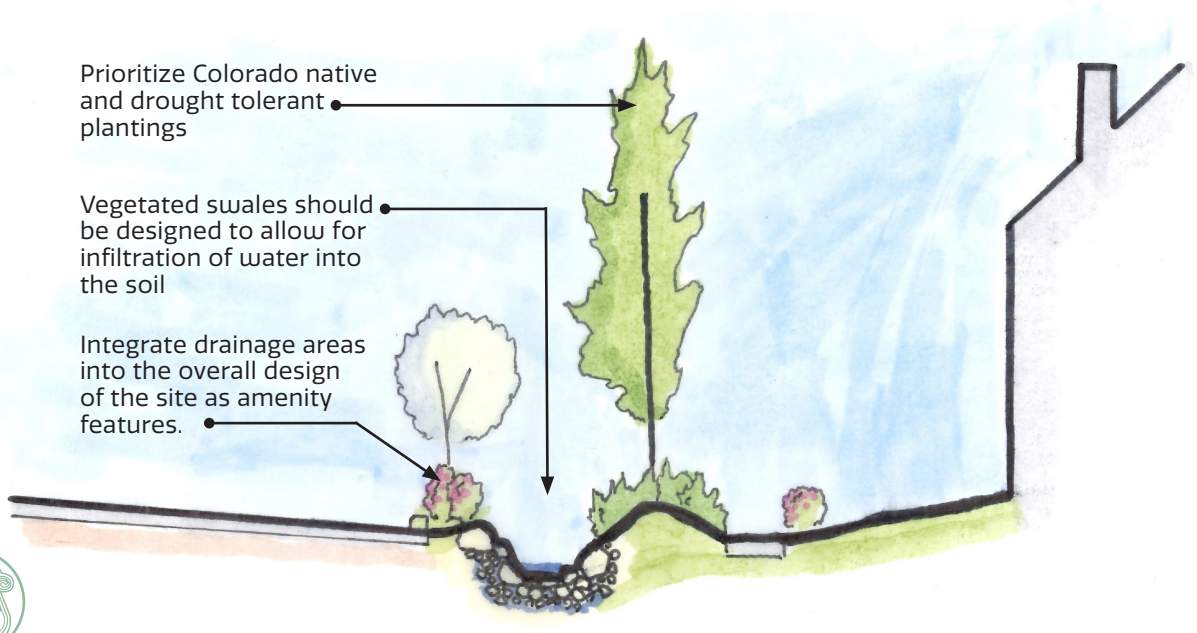
The objectives of these design guidelines are to:

a. Reflect the vision and policies set forth in the Town of Berthoud Comprehensive Plan.
b. Supplement landscape development standards found in the Town of Berthoud Municipal Code.
c. Maintain or improve property values.
d. Enhance the town's natural beauty, visual character, and climate resilience.
e. Encourage high-quality landscapes.
f. Facilitate a high level of resource conservation.
g. Provide designers and decision makers with a tool that is reflective of the town's Colorado climate landscape character and sense of place as the 'Garden Spot of Colorado'.

This section will incorporate overall landscape strategies to be implemented in all place types.

An ecology based stormwater management system is the baseline for creating a resilient and sustainable city. The core principles of these guidelines are to enhance landscape biodiversity, maximize water infiltration, and create a distributed network for stormwater management that is redundant and well connected.

1. Impervious surfaces should be kept to a minimum when not required by town.
2. Infiltration of water into the soil should be promoted by best practice grading and drainage design.
3. Permeable paving materials should be used to the extent practical in hardscaping areas like driveways and parking lots to recharge groundwater and reduce stormwater runoff.
4. Vegetated swales should be designed to allow for infiltration of water into the soil. Where practical, swales should be located along the edges of streets and along parkways.
5. Stormwater runoff should be diverted from impervious roofs and paths into permeable landscaping areas to increase water infiltration into the ground.
6. In areas with poor drainage, subsurface water storage or bioswales should be provided.
7. Drainage systems should be decentralized, to distribute storm water across the site instead of channelizing it.
8. Consider using multiple stormwater strategies (bioswales, permeable pavers, rain gardens) that cleanse water and increase infiltration.
9. Landscape designs should slow, spread and soak stormwater, allowing plants to filter stormwater instead of piping directly to retention ponds.



TOWN OF BERTHOUD

PLANT SELECTION DESIGN GUIDELINES

1. Plant selection should be specific to Berthoud's climate, in addition to site conditions such as location on site/exposure, light intensity, soil types, site drainage, and irrigation.
2. Plant selection should enhance the plants likelihood of becoming established and reduce potential disease, death, or maintenance.
3. Colorado native and drought tolerant species should be prioritized as much as possible.
4. Select plants that are beneficial to native pollinators and incorporate landscape features that provide habitat for native pollinators.
5. Plants and trees for a new development project should meet the following criteria:
   - 1.5" – 2" caliper or larger (for trees)
   - Shrubs should be in 5 gallon containers
   - Vines and Espaliers should come in 1 gallon containers or larger
   - Perennials and ornamental grasses should come in 1 gallon containers or larger
   - Ground cover should be in quart sized containers or larger
6. Street trees of the same species along the same street should be the same size and shape, and meet the following size criteria at the time of planting:
   - 1.5" – 2" caliper preferred, up to 5" maximum (for healthy establishment)
7. When replacing dead or dying trees, the size of the replacement tree should closely match the size of the trees next to it up to a 5" caliper.
8. The target percentage of low water use plants is eighty percent (80%). See master plant list.
9. Select plants that will contribute to winter color, texture, and form when possible to provide visual interest year round.
10. When using hardscape mulch (rock, gravel, cobble), design for seventy five percent (75%) living plant cover (full growth) for any planter or landscape area (includes tree lawns).

Town of Berthoud Facts –

- *Berthoud has been a part of the **Tree City USA** program since 1990*
- *Berthoud is nicknamed the **'Garden Spot of Colorado'** because of its abundance of trees, open space and sweeping mountain views*
- *In 2020, Berthoud passed resolution2020-01 with the sole purpose of protecting and supporting pollinators in town.*

1. Street side landscaping should present a unified design that adds to the built environment. The design should accentuate development entries with planting, monument signs, and lighting. (As needed in accordance with Berthoud's Dark Sky requirements.)
2. Landscape structures and features, hardscape, and site furnishings and fixtures should be designed as integral parts of the overall landscape concept, and they should be consistent or compatible with the neighborhood architectural style, scale, material, and finishes.
3. Where irrigation systems and/or plant materials can cause damage to sensitive building materials, a two- (2') to three- (3') foot space should be left between the outside building wall and adjacent landscaping elements to minimize damage to the building structure. This space should be filled with decorative hardscape materials.
4. Monoculture and/or plant palettes including five (5) or less species are discouraged.
5. Regionally sourced or manufactured landscape consruction materials, such as lumber, mulches, pavers, trees, shrubs, groundcover, and quarried gravel/cobbles/rocks or other hardscape materials, should be utilized where practical.
6. Permeable paving materials should be used where feasible.
7. Select street trees that are appropriate to their intended location and function.
8. Select drought tolerant, native landscaping to limit irrigation needs to conserve water, reduce storm-water runoff, and increase the capacity for groundwater recharge.
9. Use perennials, annuals, ornamental trees and ornamental grasses to accentuate gateway locations and special sites in town.
10. Hardscape materials and installation should meet the standard of care for all applicable professionals and should not result in an unsafe condition.
11. Enhanced paving materials should be provided at key focal points such as points of entry, pedestrian crossings, plazas, and other locations that warrant special visual emphasis.
12. Trees and shrubs should be located and spaced to allow for mature and long-term growth.
13. Trees should be selected on a performance basis with the objective of minimizing water use, providing shade, minimizing root intrusion, and providing color and contrast (see Master Plant List).

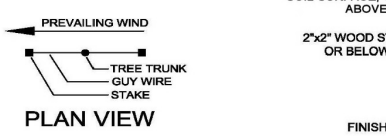
***Sustainability Tip** – A gas powered leaf blower emits nearly 300 times the amount of air pollution as a pick up truck. Replace your two stroke lawn equipment with battery powered options and reduce air pollution and help ozone levels.*

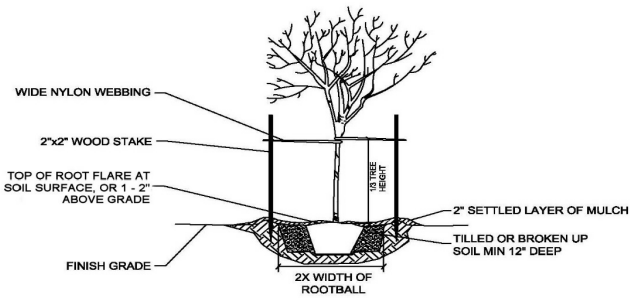
TOWN OF BERTHOUD

MAINTENANCE DESIGN GUIDELINES

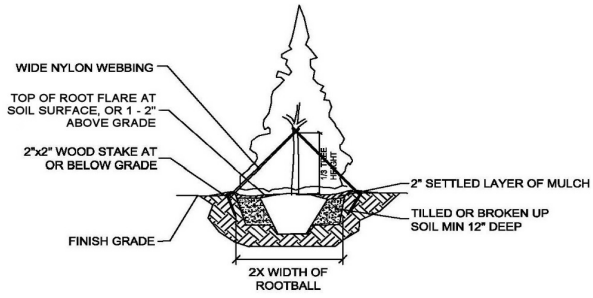
By following an ecology based strategy for landscape design, maintenance costs and effort can be reduced. When a landscape design mimics the naturally occurring ecosystem, the need for pest control and new planting is reduced.

1. Yard waste from landscaping maintenance should be collected and composted where possible. Organic materials that enter landfill contribute to climate change by releasing greenhouse gasses when decomposing in the anoxic conditions of a landfill. Conversely, organic material that is reincorporated into the soil increases soil carbon and nutrients available to plants.
2. When turf grass is used in landscaping, do not collect grass clippings and leaves that fall on the lawn. Instead, allow the organic material to break down and "feed" the soil. This will decrease the need for inorganic fertilizers and also recycle carbon as mentioned above.
3. All common area landscaping and trees will be maintained to keep plants in good condition.
4. Conduct soil analysis to determine if soil has poor organic or physical properties. Amend soil if necessary using compost or other renewable organic materials.
5. Stabilize stockpiled topsoil with native grass seed like buffalo grass during construction to prevent erosion, reduce dust, and protect microbial life.
6. Properly mulch newly planted trees and plantings and ensure they are adequately irrigated until established. Commitment to survival between 1–3 years, depending on the planting.
5. Property owners, HOA's, Metro Districts to replace dead, dying, damaged or diseased plant materials during the same growing season as the removal.
7. Diversity of plantings will decrease the cost and need for maintenance by leveraging beneficial ecosytem services like beneficial birds and insects as well as nutrient cycling.
8. When located within the pedestrian realm, always trim tree limbs and plantings to maintain pedestrian circulation. Locate rock mulch away from the pedestrian realm or contain within landscape to prevent spillage into pedestrian traffic.

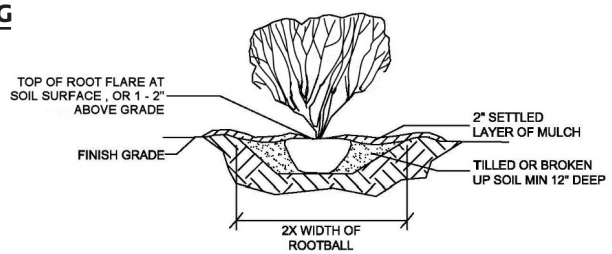




SMALL TREE PLANTING



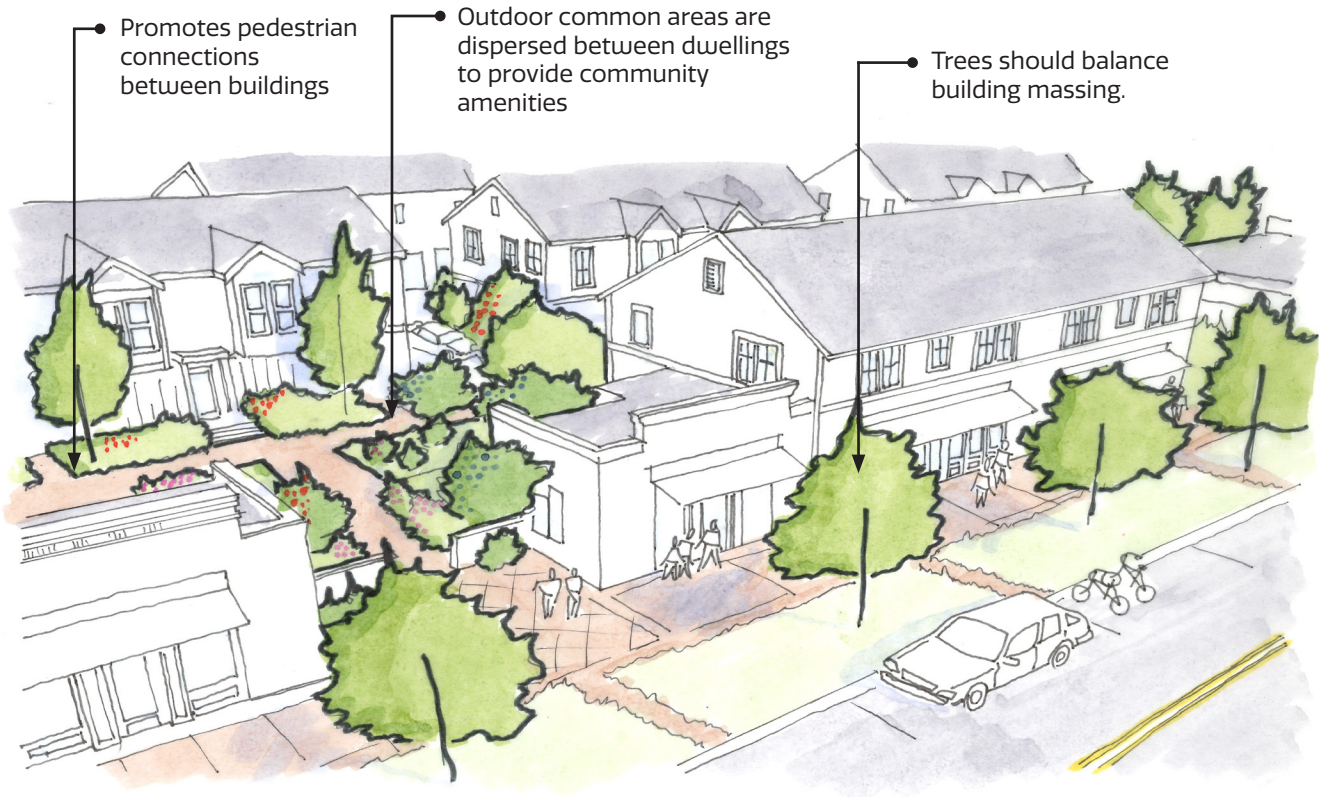
EVERGREEN TREE PLANTING



TYP. SHRUB PLANTING

The urban residential Landscape Design Guidelines apply to all new projects within the Urban Residential Character district.

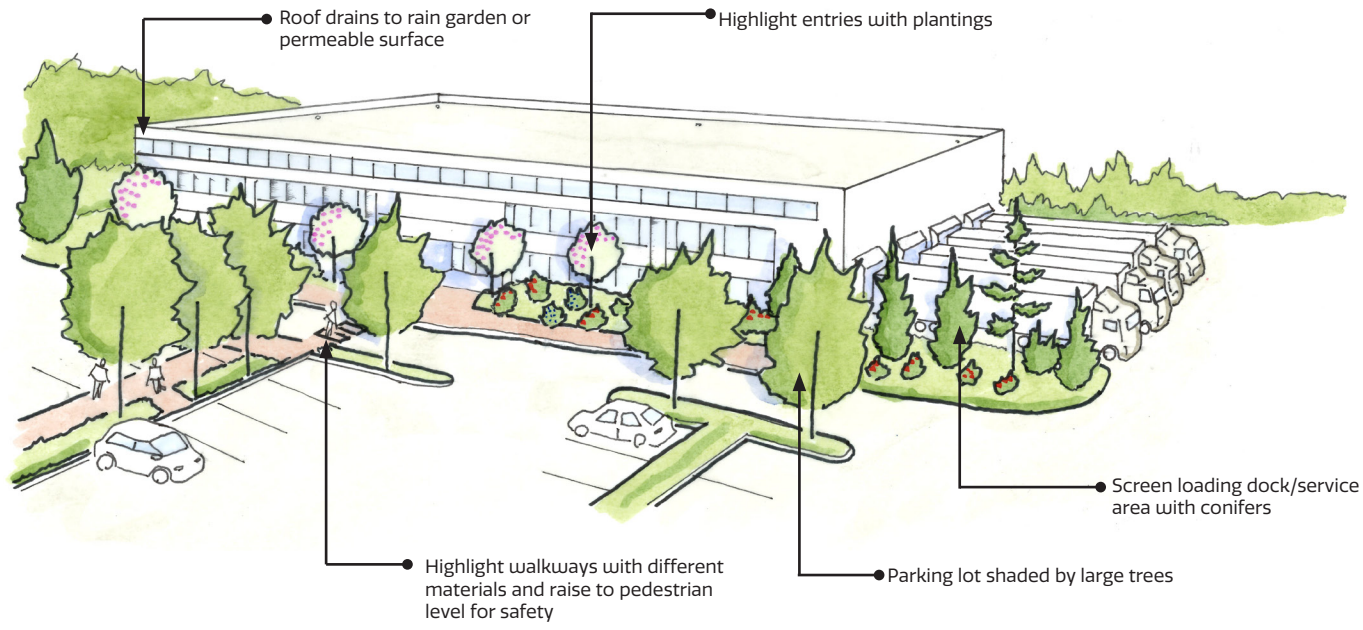
1. Landscape plans shall be prepared by a Colorado Licensed Landscape Architect for new development.
2. All landscaping in public and common use areas should be maintained to attractive conditions by the owner, HOA, or Metro District (whichever applies).
3. Landscaping should be provided in common use areas associated with urban residential development.
4. Trees should be selected with consideration to their size at maturity to balance building massing.
5. Landscape design should be pedestrian-centric, focusing on designing safe pedestrian-friendly, and comfortable environments with strong connectivity and sense of place.



6. Urban residential developments in which the majority of the dwelling units do not have ground level garden space, should set aside land for a community garden (or other community open space) sized at 1/8 acre per 50 dwellings.
7. Thoughtfully developed hardscape design should be integrated into the overall landscaping and may include decorative pedestrian pavements, site furnishings, and landscape features like sculptures, decorative planters, garden ornaments, arbors, trellises, screens, gazebos. These landscape elements should be compatible with the architectural character of the surrounding neighborhood.
8. Design common spaces to provide a sense of security derived from visibility from residential dwellings.
9. Common spaces should have clearly defined separation from vehicular areas to ensure pedestrian safety.
10. Turfgrass lawns should be limited for spaces for active and passive recreation for activities such as sports, games, and group events.

The following urban industrial landscape design guidelines apply to all new projects within the Urban Industrial Character District.

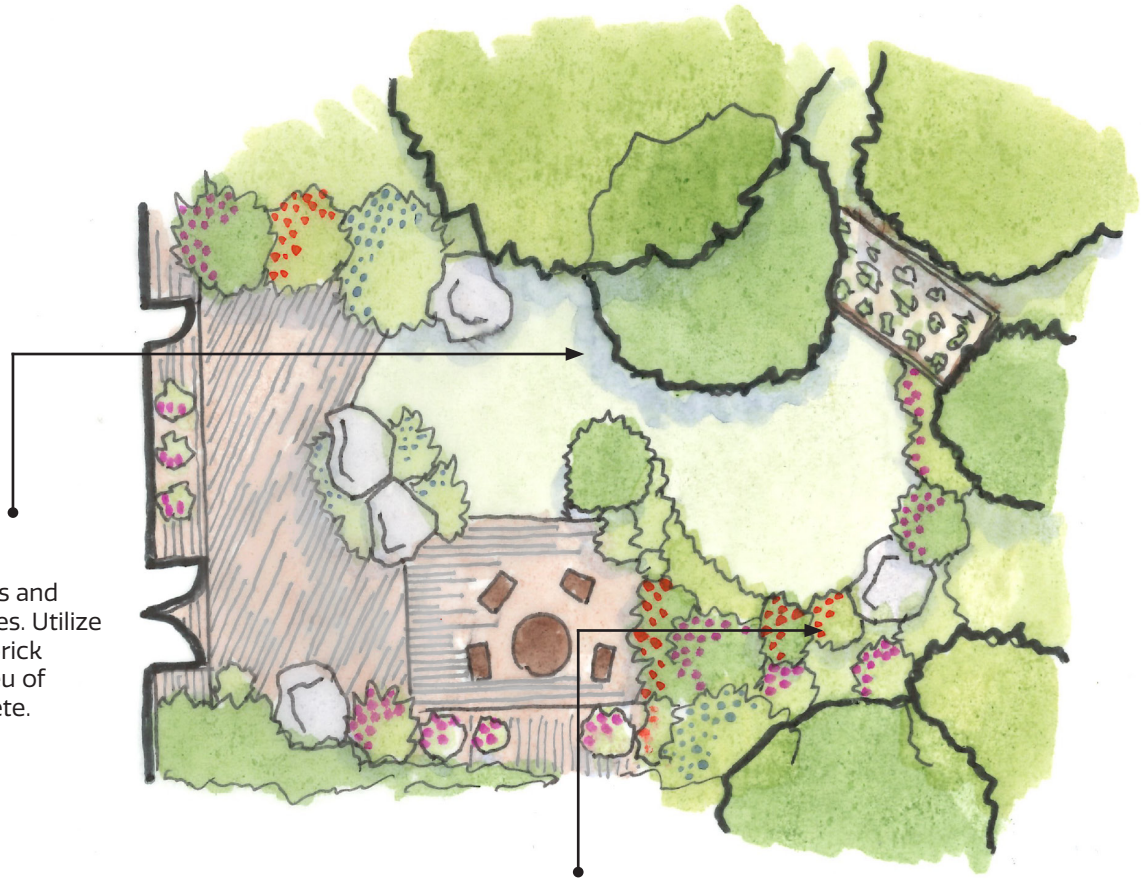
1. Landscape plans shall be prepared by a Colorado Licensed Landscape Architect for new development.
2. Landscaping should create an environment that softens the expanses of buildings and parking spaces. Landscaping elements include trees, shrubs, and ground cover at the base of buildings and to emphasize key architectural features.
3. Landscaping should be used to focus attention on entrances to buildings, shade parking lots, and screen loading and service areas.
4. Landscaping should be in scale with adjacent buildings and be of an appropriate size to accomplish its intended goals.
5. Vines and potted plants should be used, when necessary, to provide wall, column, and post texture and color, as well as to accentuate entryways, courtyards, and sidewalks.



6. Vertical landscape materials should be used to visibly reduce the size of large walls.

The following suburban and old town residential landscape design guidelines apply to all new projects within the Suburban Residential Character District and the Old Town Residential Character District.

1. All new land development applications except building permits for individual single family home residences should retain a licensed landscape architect to prepare landscape plans.
2. Residential homeowners are encouraged to retain a licensed landscape architect or licensed landscape contractor to prepare landscape plans.
3. Landscaping should include a variety of plant, tree, and groundcover species.
4. Front yard landscaping should visually integrate the adjacent natural landscape where possible.
5. Artificial turf should only be used in private backyards or for sports fields.



Minimize turf areas and impervious surfaces. Utilize raised desks and brick pavers patios in lieu of impervious concrete.

Mix medium height perennials for season color & plant species in groups

6. Dwellings should incorporate landscaping features to soften the transition between the home and the street.
7. Locate trees away from utility lines extending to the residence.
8. Turfgrass lawns are discouraged within single-family landscape areas except where adjacent to outdoor living areas such as patios.
9. Residential driveway pavement incorporating decorative material (e.g., pavers, bricks, and colored concrete) to break up and accentuate the surface is encouraged.
10. Permeable paving materials should be used where feasible.
11. Whenever possible, each front yard should have at least two ornamental trees on the property. Front yard trees should have mature sizes in scale with the massing and height of the residence. One tree should be located between 4'-5' of attached sidewalks, and within the tree lawn at detached side walks.

Correct ratio living plant material in rock beds

Incorrect ratio of living plant material within rock bed

The following urban downtown landscape design guidelines apply to all new projects within the Urban Downtown Character District.

1. Landscape plans shall be prepared by a Colorado Licensed Landscape Architect for new development.
2. Keep in mind that the conditions of various planting sites in the downtown area will vary and should be evaluated for individual landscape objectives and suitability to the specific street on which they are to be planted. The following guidelines should be followed:

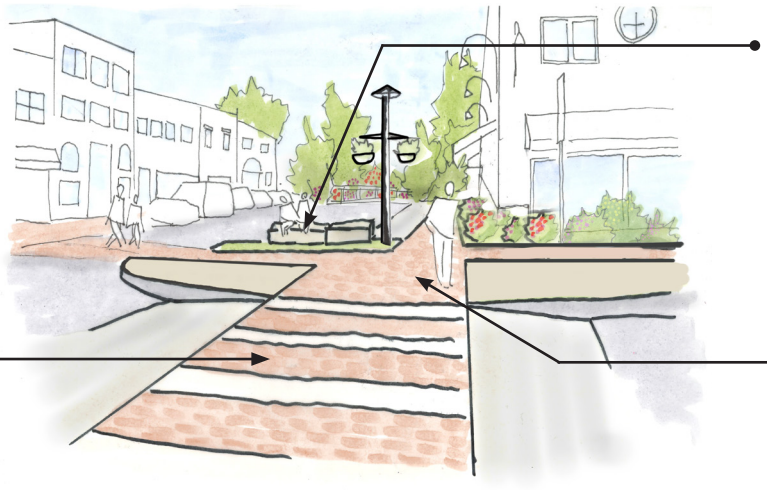
- Large trees should be located along wide right-of-way streets, and principal access streets such as along Mountain Ave.
- Large trees should also be used to highlight corners, to provide cover for large plazas, or as accents against the skyline.
- Ornamental trees should be used to provide seasonal color and a visual focal point for special locations such as a building entrance, corner areas, sitting areas, bus stops, or other significant areas or view corridors.
- Use of streetscape elements that define the urban palette are encouraged, including tree grates within sidewalk zone, benches and planters with durable materials, decorative paving to define special areas.
- Where tree grates are used they should be sized to accommodate tree growth, minimum 6' x 8'.
- When appropriate, use native grasses, paved areas, and ground covers within the design of a tree lawn.
- Street trees should be properly planted and maintained for health and growth. Replace diseased, damaged or dying trees immediately.

Correct placement and care of successful street tree

Incorrect upkeep of street tree replacement and maintenance

A. **Buffer zone**: plant street trees and use planters to protect the pedestrian path and separate walkways from the street.
B. **Pedestrian walkway**: provide adequate space for pedestrians and do not block with outdoor seating.
C. **Storefront zone**: activate storefront zone with plantings and seating

1. Landscaping must be incorporated in the design of pedestrian areas along the building fronts. Plantings for pedestrian areas should be designed with attention to color, texture and form. Use a variety of trees, shrubs, perennials, and ground covers. Provide seasonal plantings in planters, pots, hanging pots and beds to add color, beauty and variation.
2. New developments should provide for opportunities for the installation of art in landscaped areas and in front of buildings.
3. Do not use gravel or loose stone in place of ground cover in the curb zone
4. Consider maintenance with any improvement made within the right of way.

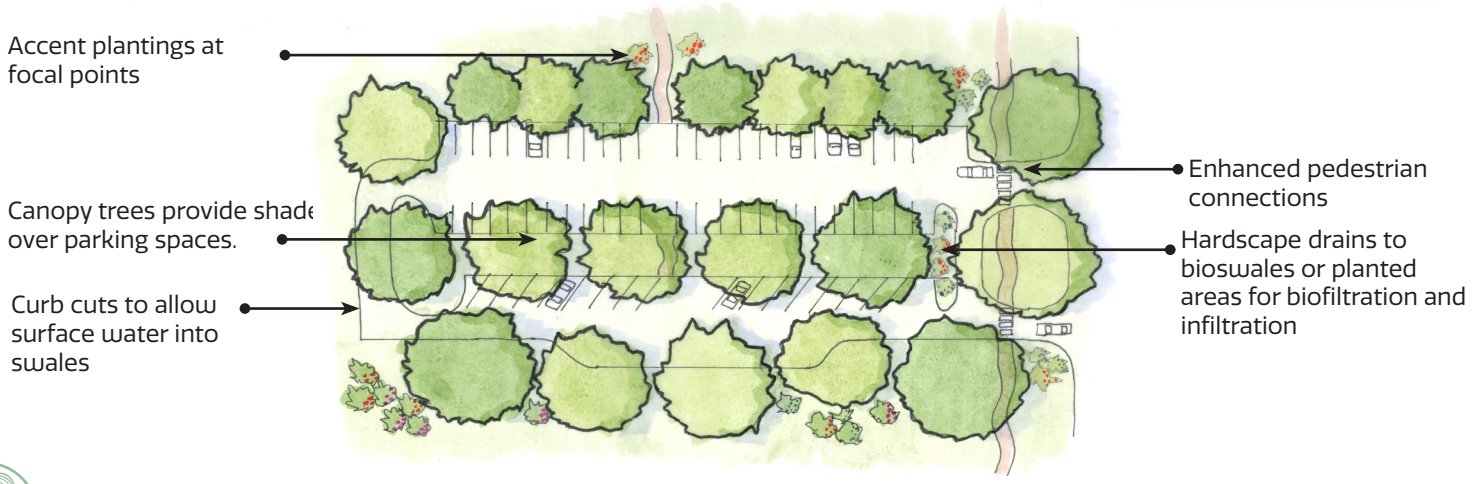


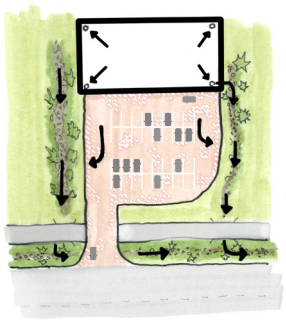
The following suburban commercial landscape design guidelines apply to all new projects within the Suburban Commercial District.

1. Landscape plans shall be prepared by a Colorado Licensed Landscape Architect for new development.
2. Landscapes should be designed to be low maintenance and compatible with the purpose of the facility.
3. Pedestrian connections should be utilized to create an open network of walkways, sidewalks, and trails throughout the commercial development.
4. The use of shade trees and shade structures may be used to diminish heat by providing shade in summer and allowing solar gain in winter to reduce dust, provide visual screening, and wind breaks.
5. Accent planting should be used around entryways and key focal points.
6. Vines and potted plants should be used to provide wall, column, and post texture and color, in addition to accentuating entryways, courtyards, and sidewalks.
7. Canopy trees should be used in parking lots to ensure shading of paved areas. Shade cover at maturity should meet or exceed fifteen percent (15%) of parking stall paved surfaces.
8. Pedestrian walkways should be provided in all parking areas.

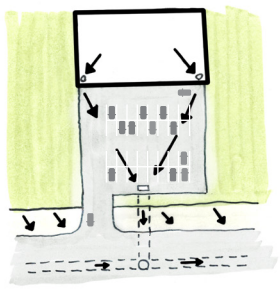
Parking Lot Landscape with Berms

Parking Lot Landscape with Shrubs



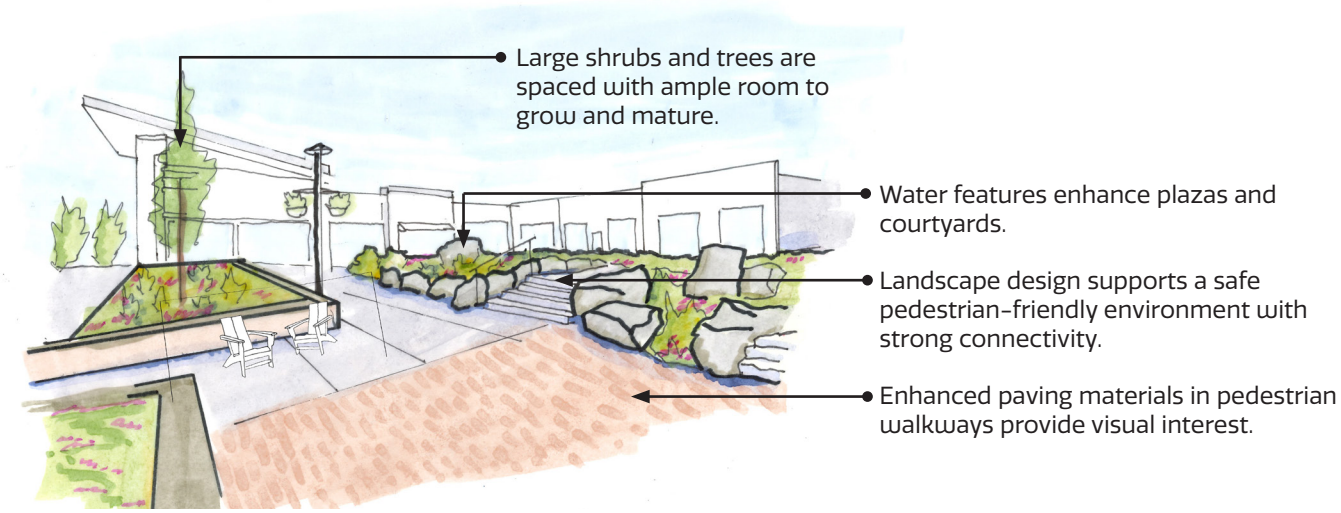


SURFACE DRAINS TO LANDSCAPE



SURFACE DRAINS TO INLET ONLY

9. Landscape design should be placed to support a safe pedestrian-friendly environment with strong connectivity.
10. The use of hardscape elements such as textured pavers, large ornamental flower pots, decorative walls, and water fountains are encouraged.
11. Water features may be considered with plantings and natural materials in courtyards and plazas.
12. Direct Water from parking lots, roof drains and other areas into landscape areas that could benefit from additional water and /or improve the quality of stormwater.



ENVIRONMENTALLY SENSITIVE AREAS

1. Provide a buffer zone from all environmentally sensitive areas adjacent development. Buffer to be maintained by the HOA or Metro District.
2. Identified environmentally sensitive areas and their buffers should be protected from disturbance unless necessary based on the following circumstances:

- Landscape improvements would protect and mitigate effects from adjacent development.
- Restoration of area is necessary based on existing conditions.
- Improvements are needed for public safety.
- Improvements are necessary and cannot be located elsewhere.
- Improvements include trails and public use areas designed to be compatible and complementary with the sensitive natural area.

Restoration of environmentally sensitive areas with compatible passive uses

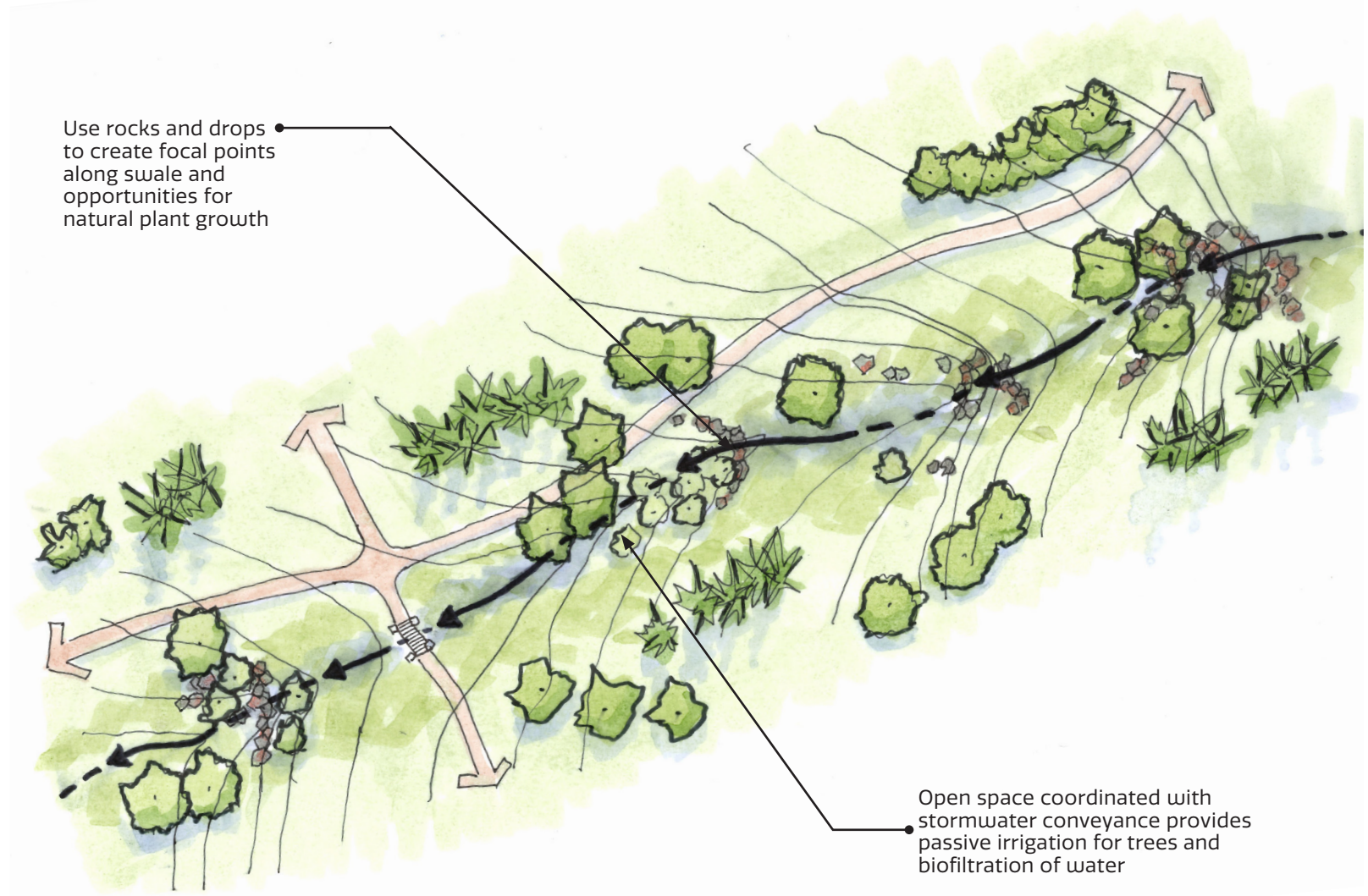
Wetland area with needed improvements to existing conditions

Water Saving Tips

- ***Don't water between 10 am and 6 pm. Instead, aim for watering at dawn or dusk to reduce evaporation and maximize water absorbed by plantings.***
- ***Set your lawnmower to the highest setting. Longer grass will keep the ground cooler and retain more water.***
- ***Minimize runoff by allowing for soak-time between short water cycles. For instance, water for 5 minutes, wait an hour, then water for 5 more minutes.***
- ***Consider looking into a rainwater collection system for lawn and garden watering, which not only cuts down on your costs but cuts out the energy cost associated with water from the treatment plant.***

OPEN SPACE

1. Provide open space as a transition between development parcels and natural areas.
2. Provide open space at trail corridors, drainage areas and as a relief from the built environment.
3. Plan open space areas with native or regionally adapted plant materials, primarily unirrigated after being established.
4. Trees, shrubs and grasses that are not expected to receive enough water through natural precipitation to be irrigated temporarily for the establishment of plant growth for up to 3 years. Once established, water as necessary based on seasonal conditions.
5. Coordinate open space with the design of storm water conveyance and water quality systems and allow for passive irrigation of plantings when possible.



PARKS, RECREATION AND TRAILS

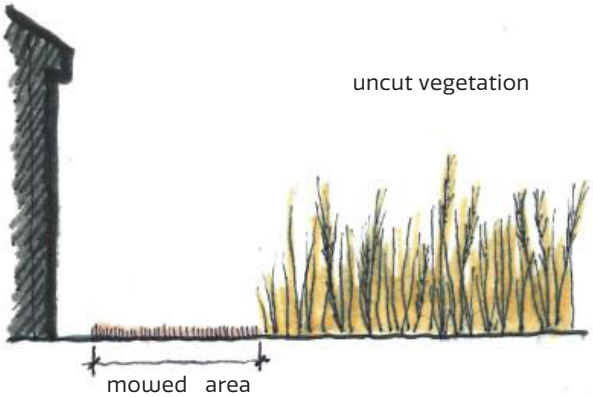
1. Design parks to serve the active and passive needs of people on-site and on nearby properties.
2. Amenities such as picnic shelters, playgrounds,amphitheaters, gardens, etc. should be appropriate to the project.
3. Reserve Irrigated turf grass for areas of parks subject to human activity.
4. Parks in residential areas:

- Provide more than 50% street frontage.
- At the discretion of the town staff, visibility and access from public trails or public properties (e.g. schools, civic buildings, etc.) may be an alternative to the street frontage requirement
- Types and locations of parks will be based upon accessibility to all residents; needs according to the Town of Berthoud; and classification according to who the park serves (e.g., Community Park, Neighborhood Park, Pocket Park, etc.).

5. Parks in commercial and mixed-use areas:

- Provide more than 25% street frontage.
- At the discretion of the town, visibility and access from public trails maybe an alternative to the street frontage requirements.
- Provide natural area transitions in parks where parks abut natural open space areas.

The Wildland Urban Interface (WUI) is the area where homes and the urban environment press against the wildland. Berthoud is included in the WUI for the Front Range of Colorado. Property owners are encouraged to protect their property and their community from wildfire. More resources can be found at https://csfs.colostate.edu/wildfire-mitigation



Multi-use path as fire break

LANDSCAPE WILDFIRE PREVENTION METHODS

1. Keep trees pruned and away from structures. Install hardscape at the base of trees.
2. Use fire-resistant plantings where possible to prevent spread. Firewise plantings are carefully spaced, low-growing and free of resins, oils and waxes that burn easily.
3. Practice good mowing techniques. Mow properties regularly, according to land use. Create fuel breaks from grassland open space areas to adjacent structures/communities by keeping a 10' boundary mowed from tall grasses. Use multiuse paths within open space areas as fire breaks by mowing each side to create the 10' firebreak.
4. Report overgrown vegetation in open space land to the Town of Berthoud Neighborhood Services Manager.
5. Establish defensible space zones around structures

- Zone 0 - Ember resistant zone (0-5 feet away from building and structures)
- Zone 1 - Lean clean and green zone (5-30 feet away from building and structures)
- Zone 2 - Fuel zone (30-100 feet away from buildings)

Well maintained landscape to prevent fire spread

Poorly maintained landscape for fire spread

PLANT SELECTION

The Master Plant List is a general guide to the plant species suitable for landscape use along the Front Range. In general, the Master Plant List is not intended to be a fixed and limiting list. Plants not found in the Master Plant List may be approved for use provided that they meet the criteria noted below. The licensed landscape architect will provide guidance material affirming compliance when selecting plants not on the list.

Due to the ever changing nature of the nursery trade, some plants on the Master Plant List will become unavailable and new species, cultivars, and hybrids will be introduced. New plants and other plants with desirable characteristics may be adopted, provided that they meet the criteria described above. Plant species may need to be erased from the Master Plant List in the future if they become susceptible to serious diseases and pests that are not currently known. An alternate up to date resource for plant selection can be found at https://plantselect.org/ and the town forestry website. Please contact the town forester to review suitability of trees not found within the given resources.

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Cacti and Succulents				
Coryphantha (Escobaria) missouriensis	Yellow Nipple Cactus	Full sun	Low	
Coryphantha (E.) vivipara	Pink Nipple Cactus	Full sun	Low	
Opuntia macrorhiza	Prickly Pear	Full sun	Low	
Yucca glauca	Plains Yucca	Full sun	Medium	

Plains Yucca, AKA Soapweed

- This plant is a very draught tolerant native species.
- It is the only host plant for the yucca moth.
- Plant Yuccas away from paths and walkways, as it's blue green leaves are very sharp
- In mid to late summer, it produces stalks of bell-shaped greenish white flowers.

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Groundcovers				
Antennaria parvifolia	Pussytoes (perennial)	Full sun	Low	
Callirhoe involucrata	Wine Cups (perennial)	Full sun	Low	
Erigeron divergens	Spreading Daisy (perennial)	Full sun	Low	
Eriogonum umbellatum	Sulphur Flower (perennial)	Full sun	Low	
Berberis repens (Mahonia repens)	Creeping Mahonia (shrub)	Full sun	Low	
Rhus trilobata 'Gro-Low'	Gro-Low Fragrant Sumac (shrub)	Partial Sun	Medium	
Arctostaphylos uva-ursi	Kinnikinnick	Full sun	Low	

Rabbitbrush

- This globe-shaped shrub is typically 2-6 feet wide, with silvery leaves and clusters of yellow flowers.
- It's deep root system allows this plant to thrive in dry climates.
- Consider planting with companion plants like russian sage, puple aster, or blue mist spirea.
- In the winter, Rabbitbrush sports fluffy seed clusters which add interest and texture to landscapes in the winter.

Shrubs				
Amelanchier alnifolia	Serviceberry	Sun/part shade	Low-med	
Amorpha canescens	Silvery Leadplant	Sun/part shade	Low	
Cercocarpus montanus	Mountain Mahogany	Sun/part shade	Low	
Ericameria nauseosa	Rubber Rabbitbrush	Sun	Low	
Fallugia paradoxa	Apache Plume	Sun/part shade	Low	

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Shrubs				
Prunus besseyi	Western Sandcherry	Sun/part shade	Low	
Ribes aureum	Golden Currant	Sun	Medium	
Ribes cereum	Wax Currant	Sun	Low	
Rhus glabra	Smooth Sumac	Sun/part shade	Low-med	
Rhus trilobata	Skunkbush Sumac	Sun	Low	
Rosa woodsii	Western Wild Rose	Sun/part shade	Low-med	
Symphoricarpos occidentalis	Snowberry	Sun/part shade	Low-med	

Jointfir AKA Mormon Tea

- This plant is extremely draught tolerant, and does not need aditional watering after it is established. This is due to it's tiny leaves, resulting in very little water lost through evapotraspiration.
- Jointfir keeps it's blue-green color through the winter, making it a great addition for year round visual interest.
- At maturity, this plant grows to 4-6ft high and 3-8ft wide.

Chamaebatiaria millefolium	Fernbush	Full sun	Low	
Chrysothamnus viscidiflorus	Yellow Rabbitbrush	Full sun	Low	
Cornus sericea	Redosier / Red Twig Dogwood	Full sun	Medium	
Crataegus phaenopyrum	Washington Hawthorn	Full sun	Medium	
Ephedra americana	Jointfir	Full sun	Low	

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Philadelphus lewisii	Mock Orange	Full sun	Low	
Physocarpus opulifolius	Ninebark	Full sun	Low	
Rhus trilobata	Three-leaf Sumac	Full sun	Low	

Swamp Milkweed

- As it's name implies, this milkweed thrives in wet environments. Look to this plant for the wet spot in your yard, or in a rain garden
- Like other milkweeds in Colorado, the flowers will attract various species of native bees and butterflies, and is a host plant for monarch butterfly caterpillars.
- At maturity, this plant grows to 3-5ft high

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Perennials				
Achillea lanulosa	Woolly Yarrow	Full sun	Low	
Adenolinum (linum) lewisii	Blue Flax	Full sun	Low	
Agastache cana	Double Bubblemint	Full sun	Low	
Amsonia jonesii	Jones' Bluestar	Full sun	Low	
Aquilegia chrysantha	Golden Columbine	Full sun	Low	
Artemisia frigida	Fringed Sagebrush	Full sun	Low	
Artemisia ludoviciana	Prairie Sage	Full sun	Low	
Asclepias incamata	Swamp Milkweed	Full sun	Medium	
Aster alpinus 'Goliath'	Goliath Alpine Aster	Full sun	Low	
Aster ascendens	Western Aster	Full sun	Low	
Aster ericoides	Many-fLowered Aster	Full sun	Medium	

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Aster falcatus	Rough white aster	Full sun	Medium	
Aster hesperius	Western Aster; Violet Aster	Full sun	High	
Aster porteri	Porter's Aster	Full sun	Low	
Baptisia australis	Blue Wild Indigo	Full sun	Low	
Berlandiera lyrata	Chocolate Flower	Full sun	Low	
Callirhoe involucrata	Poppy Mallow	Full sun	Low	
Centranthus ruber	Red Valerian	Full sun	Low	

Sunflower

- There are 5 sunflowers native to Colorado: common sunflower, Maximilian sunflower, Nuttall's sunflower, prairie sunflower, and the bush sunflower
- Sunflowers are among the easiest flowers to grow in Colorado, because they are tough and draught tolerant.
- The common sunflower can grow to 9ft tall.

Ceratostigma plumbaginoides	Plumbago	Full sun	Low	
Digitalis obscura	Sunset Foxglove	Full sun	Medium	
Engelmannia peristenia	Englemann Daisy	Full sun	Low	
Erigeron speciosus	Aspen Daisy	Full sun	Low	
Eriogonum umbellatum	Sulfur FLower	Full sun	Low	
Gaillardia aristata	Blanket FLower	Full sun	Low	
Gaura lindheimeri	Beeblossom	Full sun	Low	
Helianthus annuus	Annual SunFLower	Full sun	Low	

MASTER PLANT LIST

= Colorado Native Plant

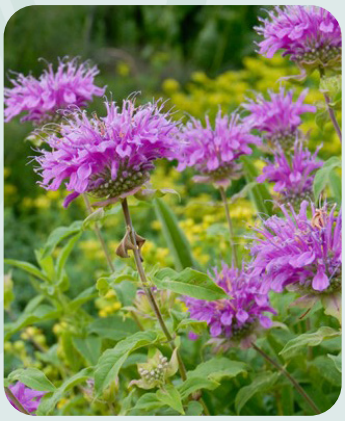
= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Hesperaloe parviflora	Red Yucca	Full sun	Low	
Lavandula angustifolia	English Lavender	Full sun	Low	
Liatris pycnostachya	Prairie Blazing Star	Full sun	Medium	
Liatris spicata	Prairie Gayfeather	Full sun	Low	
Lonicera spp.	Vining Honeysuckles	Full sun	Low	
Mirabilis multiflora	Four O'Clock	Full sun	Low	
Monarda fistulosa	Wild Bergamot	Full sun	Low	
Oenethera caespitosa	White Stemless Evening Primrose	Full sun	Low	
Oenothera macrocarpa	Evening Primrose	Full sun	Low	

Wild Bergamot AKA Native Lavender Bee Balm

- Wild bergamot is less colorful and showy than other cultivars of bee balm, but is more tolerant of dry conditions.
- In fall, its leaf color can be gold, red and yellow.
- This native perennial flower attracts bees and butterflies



Penstemon eatonii	Firecracker Beardtongue	Full sun	Low	
Penstemon grandiflorus	Large Beardtongue	Full sun	Low	
Penstemon pinifolius	Pine-leaf Beardtongue	Full sun	Low	
Penstemon	Desert Beardtongue	Full sun	Low	
Penstemon secundiflorus	One-sided Penstemon	Full sun	Low	

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Penstemon strictus	Rocky Mountain Penstemon	Partial Sun	Low	
Penstemon virens	Greenleaf Penstemon	Full sun	Low	
Penstemon virgatus	Tall One-Sided Penstemon	Partial Sun	Low	
Ratibida columnifera	Prairie ConefLower	Full sun	Low	
Ratibida pinnata	Pinnate Prairie ConefLower	Full sun	Low	
Rudbeckia hirta	Blackeyed Susan	Full sun	Medium	
Rudbeckia maxima	Great ConefLower	Full sun	Low	
Rudbeckia triloba	Brown-Eyed Susan	Full sun	Medium	
Salvia azurea var. grandiflora	Pitcher Sage	Full sun	Low	
Zauschneria latifolia var. arizonica	Hardy Hummingbird Trumpet	Full sun	Low	
Sphaeralcea coccinea	Scarlet Globemallow	Full sun	Low	
Salvia azurea	Pitcher Sage	Partial Sun	Low	
Monarda fistulosa	Bee Balm/ Horsemint	Full sun	Low	
Helianthus pumilus	Bush Sunflower	Full sun	Low	
Dalea purpurea	Purple Prairie Clover	Full sun	Low	
Solidago canadensis	Canada Goldenrod	Full sun	Medium	

Prairie Coneflower

- Prairie coneflower is a native, drought-tolerant wildflower of the Great Plains.
- This short-lived plant reseeds readily. Since it normally grows in open patches in grasslands and mountain foothills, it is a great choice for mixing with native grasses or a naturalistic landscape.

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Grasses				
Bouteloua gracilis	Blue Grama	Full sun	Low	
Bouteloua gracilis 'Blonde Ambition'	Blonde Ambition Blue Grama	Full sun	Low	
Muhlenbergia reverchonii	Undaunted Ruby Muhly Grass	Full sun	Low	
Orzyopsis hymenoides	Indian Ricegrass	Full sun	Low	
Bouteloua curtipendula	Side-Oats Grama	Full sun	Low	

Blue Grama

- The official state grass of Colorado, this grass has distinctive seed heads which make it easy to identify.
- Blue Grama can be used as a lawn, but does not tolerate heavy foot traffic well. It uses about 1/3 of the water required by traditional turf, making it a water wise alternative alrenative.
- This grass is critical to the shortgrass prairie ecosystem encompasing Berthoud due to it's extensive root network that hold down soil.

Trees				
Crataegus crus-galli 'Inermis'	Inermis' Cockspur Hawthorn	Full sun	Low	
Crataegus x mordenensis 'Toba'	Toba Hawthorn	Full sun	Low	
Gleditsia triacanthos f. inermis 'Imperial'	Imperial Honeylocust	Full sun	Low	
Gleditsia triacanthos f. inermis 'Skyline'	Skyline Honeylocust	Full sun	Low	
Juniperus chinensis	Chinese Juniper	Full sun	Low	
Juniperus scopulorum	Rocky Mountain Juniper	Partial Sun	Low	

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Picea pungens	Colorado Spruce	Full sun	Medium	
Quercus alba	White Oak	Full sun	Medium	
Quercus bicolor	Swamp White Oak	Full sun	Medium	
Quercus rubra	Red Oak	Full sun	Medium	
Quercus shumardii	Shumard Oak	Full sun	Low	
Quercus macrocarpa	Bur Oak	Full sun	Low	
Quercus muehlenbergii	Chinkapin Oak	Full sun	Low	
Quercus robur	English Oak	Full sun	Medium	
Quercus shumardii	Shumard Oak	Full sun	Low	
Quercus gambelii	Gambel Oak	Partial Sun	Low	
Sophora japonica	Japanese Pagoda Tree	Full sun	Medium	
Tilia cordata	Littleleaf Linden	Full sun	Medium	
Syringa reticulata	Japanese Tree Lilac	Full sun	Low	
Pinus • edulis • flexis • heldreichii • mugo • nigra • strobiformis	· 'Pinyon pine' · 'Limber pine' · 'Bosnian pine' · 'Mugo pine' · 'Austrian pine'	· Full sun · Full sun · Full sun · Full sun · Full sun · Full sun	Low-Med Low-Med Medium Low-Med Medium Low-Med	

Ponderosa Pine

- This majestic tree is well adapted to high temperatures and low moisture and is highly resistant to low-intensity fire.
- A long taproot helps the drought-resistant pine obtain adequate moisture and also decreases its chances of being uprooted by strong winds.
- Scientists don't know why, but older ponderosa pines smell like butterscotch!

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Tilia americana	American Basswood	Full sun	Medium	
Tilia amurensis	Linden	Full sun	Low	
Tilia tomentosa	Silver Linden	Full sun	Medium	
Tilia x flavescens 'Glenleven'	Glenleven Linden	Full sun	High	
Prunus virginiana 'Shubert'	Canada Red Chokecherry	Full sun	Low	
Pinus ponderosa	Ponderosa Pine	Full Sun	Low	
Acer glabrum	Rocky Mountain Maple	Full sun	Medium	
Populus Deltoides Monilifera	Plains Cottonwood	Full Sun	High	

Plains Cottonwood

- Adapted to Colorado's eastern plains, this is the largest native broadleaf tree in the state.
- One of the most ecologically and culturally significant trees in Colorado, it thrives in riperian zones.
- Cottonwoods reduce erosion, capture and filter sediment, and increase water infiltration.

*** Appropriate in natural corridors and private open space, requires approval from town forester.**

MASTER PLANT LIST

= Colorado Native Plant

= Pollinator Friendly

= Street Tree Approved

Scientific Name	Common Name	Sun/Shade	Moisture Needs	Notes
Acer tataricum	Tartarian Maple	Full sun	Low-Med	
Acer grandidentatum	Big Tooth Maple	Full sun	Low-Med	
Aesculus arguta	Texas Buckeye	Full sun	Low-Med	
Aesculus glabra	Ohio Buckeye	Full sun	Medium	
Amelanchier alnifolia	Saskatoon Serviceberry	Full sun	Low-Med	
Amelanchier canadensis	Shadblow Serviceberry	Full sun/ Light shade	Low-Med	
Catalpa Sp.	Catalpa	Full sun	Low-Med	
Celtis occidentalis	Hackberry	Full sun	Low-Med	
Cercis canadensis	Eastern redbud		High	
Crataegus · ambigua · phaenopyrum · viridis	· Russian · Washington · Green	· Full sun · Full sun · Full sun	· Low · Med · Low-Med	
Ginko biloba (Male trees)	Ginko tree	Full sun	Med	
Gymnocladus dioicus	Kentucky Coffeetree	Full sun	Low-Med	
Malus 'Spring Snow'	Spring snow crabapple	Full sun	Low-Med	
Prunus padus	European Birdcherry	Full sun	Medium	
Prunus virginiana	Sucker Punch Canada Red	Full sun	Low-Med	
Pyrus calleryana	'Chanticleer', 'Cleveland Select', 'Capital', 'Redspire'	Full sun	Low-Med	
Ulmus • americana • davidiana	• "ValleyForge-Triumph" • David Elm	· Full sun · Full sun	Low-Med	
Abies concolor	White fir	Full sun	Med	

PROHIBITED LIST

Trees Prohibited in Town of Berthoud right of ways or on public lands.

Scientific Name	Common Name
Fraxinus spp.	Any Ash species- Due to EAB presence in northern front range
Populus spp.	Any Poplar species- Cottonwood, Aspen, Silver Poplar, Lombardy Poplar
Salix spp.	Any Willow species
Acer negundo	Box Elder Tree *does not include Sensation Boxelder
Ulmus pumila	Siberian (Chinese) Elm
Robinia pseudoacacia	Purple Locust/ Black Locust
Morus alba	Mulberry
Pyrus calleryana 'Bradford'	Bradford Pear
Juglans nigra	Black Walnut
Elaeagnus angustifolia	Russian Olive
Ailanthus altissima	Tree of Heaven
Tamarix spp.	Tamarisk (Salt Cedar)
Acer Rubrum	Red Maple
Acer saccharinum	Silver Maple
Acer x freemanii	Freeman Maple (Autumn Blaze Maple)
Betula spp.	Birch
Any weeping or pendulous tree type eg., Weeping birch	
Any shrub or hedge which by its habit of growth would obstruct, restrict, or conflict with necessary and safe use of the public rights-of-way.	
Conifers or evergreens which would eventually grow over the sidewalks or streets.	
Pod producing Honeylocust	

Colorado Noxious Weeds

Noxious weeds threaten valuable wildlife habitat and natural resources, cause economic hardships to agricultural producers, and are a nuisance for recreational activities. The Noxious Weed Act requires all Colorado residents to control noxious weeds using integrated methods to manage noxious weeds if the same is likely to be materially damaging to the land of neighboring landowners.

Find a list of Colorado Noxious Weeds here : Noxious Weed List

or go to https://ag.colorado.gov/conservation/noxious-weeds/species-id

APPENDIX

MAINTENANCE PLANS

All property owners/occupants of residential, mixed use, commercial, or industrial property with a site-specific development plan such as a Site Plan or Use by Special Review are responsible for the maintenance and replacement of landscaping as shown on that approved plan. The below maintenance checklist should be used to establish a landscape maintenance plan, to be submitted to the Town of Berthoud for review.

Introduction

- Provide a description of the development and the area of coverage.
- Provide contact information for specific questions or concerns (names, phone numbers and hours of operation).

Plant Material

- Provide direction on pruning and trimming of plant material.
- Provide direction for establishment of native grasses and seeded areas. Include information about mowing frequency based on season. If shrub beds are within seeded areas, provide direction to mow and trim to maintain visibility. If grasses are within areas used for fire breaks, provide direction on height and frequency of mowing.
- Provide direction for watering in irrigated areas throughout the year. Use season specific standards for winter watering and growing season watering to ensure that plants get the proper amount of water throughout the year.
- Provide direction on fertilization of trees and shrubs. Include information about when to fertilize and the fertilization process.

Mulch

- Provide direction on maintenance for all mulch beds to ensure that the standard depth remains constant and per specifications.
- Provide direction on water required to establish native grasses

Irrigation Systems

- Provide information on monitoring and repairs to irrigation systems. Inlcude start up (spring start up procedures) and shut down (winterization procedures) as well as weekly, monthly and yearly maintenance instructions. Include contact for reporting all problems with system and maintenance of the systems.

Landscape Maintenace Schedule

- Provide a general monthly checklist for landscape maintenance for each month of the year.

APPENDIX

SAMPLE MAINTENANCE PLAN

Project Name
Maintenance Manual

TABLE OF CONTENTS

APPENDIX

SAMPLE MAINTENANCE PLAN

PLANT MATERIAL

Pruning/Trimming:

1) In general, prune or trim shrubs and trees just after their flowering period and only as necessary. No shearing is allowed. Remove any dead or dying branches. Notify Contact Name of any tree pruning needs observed during regular maintenance. Tree pruning will be done by either the _____ or by a certified arborist employed by _____, under the direction of and with prior consent from _____. Pruning of all shrubs will be completed by _____, at appropriate times determined by them.

2) Make all cuts clean; keep saws and pruners sharp.

3) Pruning will take place as needed to prune all dead, diseased, or injured branches.

Native Grass Seeded Areas:

1) Native grass areas will be mowed 2 times per growing season or as needed to help control weeds. All bare areas will be touch up seeded in spring or fall seeding windows.

2) For shrub beds within native seed area, mow or trim as necessary to maintain visibility of shrubs and keep grass from overshadowing view of shrubs.

3) Irrigate native seeded areas for 2 years (or until established). Once established, water as necessary based on seasonal conditions.

Watering in Irrigated Areas during Winter Months:

1) Winter watering is extremely important and should take place monthly or more when there are periods of dry, warm weather or heavy winds. Deep root watering on all trees is also a good practice. Trees planted on the project shall be watered once per month or more at the rate of 30 gallons per tree for the months of November through April until the Landscape Establishment period ends. Shrubs planted on the project shall be watered at the rate of 10 gallons per shrub for the months of November through April. Winter watering will be completed for both years of the maintenance plan requirement.

2) It is better to water heavily a fewer number of times than to water lightly a greater number of times. Over-watering is a major cause of problems in plant material and is much more difficult to correct than under-watering.

3) Check soil moisture as often as possible, specifically during periods of prolonged dry/windy weather and especially when there is no snow cover, to determine water needs of the plant. The soil should be moist, not wet.

4) Winter watering frequency shall be adjusted based upon amount of snowfall and frozen conditions/warm, windy conditions.

Watering Irrigated Areas during Growing Season Months:

1) Do not over-water plantings. Drip systems should be left on for enough time to saturate the root zone. Avoid multiple start times with Drip system. Do not allow run-off from the Drip system. The trees will need to receive 30-40 gallons of water per week where as shrubs will receive 6-10 gallons per week.

APPENDIX

SAMPLE MAINTENANCE PLAN

Fertilizing Trees and Shrubs:

1) All plant material should be fertilized each spring with a well-balanced, slow release synthetic or organic fertilizer in early spring.

2) Granular slow release fertilization will be of 5-5-5 formulation or similar, applied per label directions. Hand water immediately after fertilizing to force fertilizer into soil and wash any fertilizer from plant surfaces.

Weed, Insect and Disease Management:

An Integrated Pest Management (IPM), approach will be used to control pests, weeds, insects and diseases. The IPM program coordinates long-term prevention or suppression of pest problems to minimize impacts to human health, the environment, and non-target organisms.

Pesticides are to be used as a last resort after exhausting all other options. If pesticides are used they must be chosen from the list of products that have been reviewed, evaluated and approved by the IPM Subcommittee.

Weeds in planting beds will be removed on a weekly basis as the weeds emerge. Dispose of all weeds off site. Regular maintenance of the mulch layer will help minimize weeds in the planting beds. If herbicides must be used, they are to be chosen from the list approved by the IPM subcommittee. Use the least toxic herbicide available and spot apply on weeds.

Plant material deemed dead or irreparably damaged will be removed and replaced each month and within 30 days of notification with healthy, like plant materials.

Warranty plants shall not be installed during the summer months (June, July and August)

General IPM Steps and Methods:

1) Prevention first: Follow accepted maintenance practices (correct watering, mulching, pruning, etc).

2) Indentify the pest life cycle and characteristics.

3) Set action thresholds – tolerate minimum damage.

4) Monitor regularly and include any findings in project log.

5) When pests exceed threshold, use control methods with the least non-target impacts. “Know the Pest” by treating it when it is in its most vulnerable state and when its natural enemies are in their least susceptible state.

6) Keep records in the project log of control methods and results.

APPENDIX

SAMPLE MAINTENANCE PLAN

Wrapping/Staking:

1) All deciduous trees should be wrapped by November 1st – 15th of the year they are planted. Specific tree wrap will be cut in a continuous strip of sufficient length to wrap tree. Wrap from soil surface to the first branch of each tree. Wrap with over-lapping wraps of 1.5". Secure wrapping with wrapping tape and do not use electrical tape or string. Deciduous trees should be wrapped for the first four to five years after planting. Wrapping shall be removed between April 1st – 15th of the following spring.

2) Remove stakes after the second full growing season, depending on the type of tree, root growth and wind at the site.

WOOD MULCH

Check the depth of Wood Mulch during maintenance activities. Add additional mulch in areas that have decayed or have thinned out over time. All mulch beds will be kept at the depth specified in the specifications.

AUTOMATIC IRRIGATION SYSTEM

Start-up, Shut-down and weekly operations will be coordinated with . If a problem has been identified with the irrigation system notify and will proceed in troubleshooting and fixing the problem.

Monitor the moisture levels around all plant material. Report problems, including browning or oversaturation, to . Recommend necessary adjustments and then coordinate with the owner rep to alleviate the problem. Control all irrigation systems, including clock settings. Fix any leaks or other problems with the material installed on this project. Any repair work to be coordinated with owner rep.

Provide the following maintenance items/extra stock to the owner rep prior to final acceptance:

1) 2 sets of special tools required for removing, disassembling and adjusting each type of sprinkler head and valve supplied on this project.

2) Two 6-foot valve keys for operation of gate valves or stop and waste valves (if applicable).

3) 2 keys for each automatic controller.

4) 2 quick coupler keys and 2 matching hose swivels for each type of quick coupling valve installed.

5) 2 aluminum drain valve keys of sufficient length for operation of drain valves.

6) 4 Rotor heads of each type used.

7) 100' of Inline Emitter Tubing of each type used.

APPENDIX

SAMPLE MAINTENANCE PLAN

Spring Start–up Procedures: Coordinate with owner rep at site to be on hand during start–up procedures.

1) Run through the zones attached to the project to test for any winter damage.

2) Set programs for watering frequency and duration of the project zones in coordination with the owner rep. Run through clock to ensure a working system.

3) Verify that all drip emitters are functioning properly. Repair if needed.

Weekly Maintenance:

1) Inspect valves and Drip system weekly for any damage or leaks. Any repairs made shall be made with materials of the same manufacturer and model as the original equipment.

2) Check for dry or oversaturation of planting areas and coordinate with owner rep to make changes.

3) Clean up: Continuous clean up operations will be performed throughout the duration of the work. Remove rubbish from site on at least a weekly basis, or when on site for other maintenance tasks.

4) Trench settling will be repaired and re-seeded if it occurs.

Monthly Maintenance:

1) All weekly procedures.

2) Coordinate with owner rep to adjust times on controller to compensate for different temperatures and precipitation each month.

3) Run through controller to assure proper working condition for project zones.

Yearly Maintenance:

1) All monthly procedures.

2) Inspect all components (valves, Drip pipe, etc.) to assure proper working condition.

3) Flush Drip pipes once per year to remove any possible sediment.

4) "Start-up" and "winterize" system (see detailed explanations below). Coordinate with owner rep.

APPENDIX

SAMPLE MAINTENANCE PLAN

Winterization Procedures: Coordinate with owner rep at site to be on hand during winterization procedures.

1) Close the main supply.

2) Connect air compressor to the service tee located on the vacuum breaker.

3) Turn controller to station #1 and start compressor.

4) Force air through station #1 until all water has been blown out. Continue process through stations #2, #3, etc., until all stations have been blown out completely (a minimum of 3 minutes).

5) Open all drain valves and petcocks on the vacuum breaker.

6) Turn off controller, but allow to run so that lubricants stay on clock motors.

General Notes:

1) It is important to repair any malfunctioning equipment as soon as possible especially during the hot mid-summer months.

2) Check for spots that appear to be dry. The sooner these are corrected, the less damage there will be.

3) Time of year and conditions will affect watering times. A base time of 35 to 50 minutes shall be used for Drip zones. The trees require 30 to 40 gallons of water per week where as shrubs will require 6-10 gallons of water per week. These times are averages only and will vary depending on time of season, plant material type, wind conditions and soil conditions.

APPENDIX

SAMPLE MAINTENANCE PLAN

GENERAL MONTHLY CHECKLIST

As Needed Items
- Tree pruning needs for dead or damaged limbs.
- Trash removal

January
- Winter water

February
- Winter water

March
- Winter water

April
- Remove tree wrap
- Activate and troubleshoot sprinkler system
- Remove weeds as needed
- Re-mulch beds as needed
- Remove weeds

May
- Fertilize trees and shrubs
- Re-mulch beds as needed
- Inspect sprinkler system operation/adjust timing as needed
- Prune trees and shrubs as needed
- Remove weeds

June
- Check all trees and shrubs for insect pests
- Inspect sprinkler system operations/adjust timing as needed
- Remove weeds
- Re-mulch beds as needed

July
- Inspect sprinkler system operation/adjust timing as needed
- Remove weeds
- Re-mulch beds as needed

August
- Inspect sprinkler system operation/adjust timing as needed
- Remove weeds
- Re-mulch beds as needed

September
- Inspect sprinkler system operation/adjust timing as needed
- Remove weeds
- Re-mulch beds as needed

October
- Adjust staking of new trees
- Reduce watering times on sprinkler system
- Remove weeds

November
- Wrap trees
- Winterize irrigation sprinkler system
- Winter water

December
- Winter water

APPENDIX

SAMPLE MAINTENANCE PLAN

LANDSCAPE MAINTENANCE SCHEDULE 2015–2017

Routine – Quantities Based On Times Per 1 Year	**Jan '16-'17**	**Feb '16-'17**	**Mar '16-'17**	**Apr '16-'17**	**May '16-'17**	**Jun '15-'16**	**Jul '15-'16**	**Aug '15-'16**	**Sep '15-'16**	**Oct '15-'16**	**Nov '15-'16**	**Dec '15-'16**	**Tot For 2 Yr Maint Period**
Shrub Monitoring	0	0	1	1	1	1	1	1	1	1	0	0	16
Tree Monitoring	0	0	1	1	1	1	1	1	1	1	0	0	16
Weed Beds	0	0	2	2	2	2	2	2	2	2	0	0	32
Trash Removal	2	2	2	2	2	2	2	2	2	2	2	2	48
Irrigation Inspection	0	0	4	4	4	4	4	4	4	4	0	0	64
Spring/Fall													
Spring Clean-up	0	0	0	1	0	0	0	0	0	0	0	0	2
Fall Clean-up	0	0	0	0	0	0	0	0	0	1	0	0	2
Irrigation Start-up	0	0	0	1	0	0	0	0	0	0	0	0	2
Winterization	0	0	0	0	0	0	0	0	0	1	0	0	2
Check Stake Guys	0	0	0	0	0	0	0	0	0	1	0	0	2
Plant Material Care													
Pruning (as needed)													
Tree Wrap	0	0	0	0	0	0	0	0	0	1	0	0	2
Wrap Removal	0	0	0	1	0	0	0	0	0	0	0	0	2
Fertilization	0	0	0	1	0	0	0	0	0	0	0	0	2
Herbicide/Pesticide as needed													
Winter Services													
Winter Water	1	1	1	0	0	0	0	0	0	0	1	1	10
Winter Watering could increase or decrease due to weather conditions													