



Design Guidelines & Standards
Landscaping



The following text, photographs and illustrations contained within this document are a compilation of the project team's work, as well as photographs produced by others for the sole purpose of communicating a vision and design for the City of Lone Tree.

The Project team is committed to the environment and hopes that all who read this document are committed as well. Please be mindful of the environment and view this document in a paperless digital format whenever possible.

Vision Statement



Lone Tree is a premier Colorado community connected by great neighborhoods, vibrant public spaces, a beautiful natural environment, and thriving businesses.

Mission Statement

We will achieve Lone Tree's community vision by doing things the best way, not just the expected way.

Acknowledgments

The City of Lone Tree's Design Guidelines & Standards are the culmination of years of contributions and guidance from past city elected and appointed officials, community members, stakeholders and staff.

Community Development staff thanks all those who participated in this process, with special thanks to the following:

City Council

Jacqueline Millet, Mayor
Cathie Brunnick, Mayor Pro Tem
Mike Anderson, Council Member
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This landscaped tree lawn provides an attractive streetscape while maintaining unobstructed sight lines at the intersection.

Introduction

Background

The City of Lone Tree incorporated in 1995 as a result of residents in the area wanting a greater voice in shaping the aesthetics of their community. Early on, landscape requirements were established in the Zoning Code and were used in the review of Site Improvement Plans (SIPs) for new development. A concentrated effort was made by the City, its Metro District Partners, HOA's, and developers to create and enhance the City's physical and natural environment. In 2004 the City established landscape design guidelines for rights-of-way to guide the review of streetscapes and ensure a more pleasurable experience when traveling by car, bicycle, or foot through the City. Over the years, amendments were made to both the Zoning Code and the Landscape Guidelines for ROW. In 2021, the City consolidated the landscape requirements into one document to remove duplicative and sometimes inconsistent provisions, and to provide applicants and staff with one convenient document for such requirements. It is hoped that these provisions will result in pleasing landscapes, while allowing for future changes in keeping with evolving best practices.

Applicability

These Design Guidelines and Standards for Landscaping apply to the following areas:

1. Site Improvement Plans (SIP) : Unless otherwise addressed by approved planned development plans, current SIPs, or sub-area plans, landscape plans are a required component of all new SIPs, and of SIP amendments, as determined by the Community Development Department.
2. Right-of-Way (ROW): Landscape plans are required for all new and expanding rights-of-way in the City, and for any landscaping or entryway tracts owned by the City, a metropolitan district, homeowners association, or private party or private entity that are adjacent to collector or arterial rights-of-way. *These are not intended to apply to the reconstruction or maintenance of such landscaped areas along rights-of-way existing prior to September 15, 2020.*
3. Water Capture Areas (WCA): Landscape plans are required for all new WCAs, as well as for any improvements to existing WCAs.
4. Subdivisions: Unless otherwise addressed in approved preliminary plans, landscape plans are required for all final plats that include new or expanding rights-of-way and/or landscaping or entryway tracts that are adjacent to collector or arterial rights of way.

Compliance

Projects are found to be in compliance with these Design Guidelines and Standards when the design concept is determined by the City to:

- Be consistent with Xeriscape Principles;
- Be in compliance with the Design Standards; and
- Meet the Intent of these Guidelines and Standards as stated in this document.

If, in the course of administration, there is any question as to the intent or meaning of any word, phrase, section, or chapter of these Guidelines and Standards, the final decision-making entity (the City Council, Planning Commission, or Community Development Director, as applicable) shall render the official interpretation.

Amendments

Amendments to these Design Guidelines and Standards shall be subject to review by the Planning Commission and action by City Council. Amendments to the appendices may be approved by the Community Development Director based on new information and/or best practices.

Readers Guide

Organization

The design guidelines and standards are categorized as follows. Depending on the scope of a project, two or more of these categories may apply to an application.

Xeriscape Principles

Approval Process (these are different processes depending on whether the landscaping is part of a SIP application, a ROW or WCA application)
(NOTE: Permit processes vary depending on the application type)

Submittal Requirements (for landscaping and irrigation plans)

Design Guidelines and Standards (organized by category)

- General Provisions (GP) – these guidelines and standards apply to all landscape plans
- SIP Design Guidelines and Standards (SIP) – these are in addition to the GP
- ROW Design Guidelines and Standards (ROW) – these are in addition to the GP
- WCA (WCA) – these are in addition to the GP

Guidelines vs. Standards

Design Standards are signified by the terms “shall” or “must;” they are mandatory unless a variance is granted as part of the application approval process. Standards are lettered provisions in this document (i.e. A, B, C, etc.); they are preceded by the category abbreviation (e.g. GP-A). Standards are located in text boxes within each category for ease of identification.

Design Guidelines are intended to communicate an overall design intent and suggest possible ways to achieve that intent. Guidelines use such terms as “should,” “may,” or “encouraged.” Guidelines are numbered provisions in this document (i.e., 1, 2, or 3); they are preceded by the category abbreviation (e.g., SIP-1, SIP-2, or SIP-3).

Relationship to Other Documents

The Design Guidelines and Standards for Landscaping are intended to be used in conjunction with other documents that provide more specific information about the City's development goals and requirements, to include the City's Comprehensive Plan, Subdivision Code, Zoning Code, and Design Guidelines and Standards for Architecture and Site Planning.



The plantings chosen outside of the Lone Tree Art Center utilize a mixture of design principles such as xeriscape and use of seasonal plantings.

Purpose and Intent

This document stems from the vision, goals, objectives and policies of the City's Comprehensive Plan, which emphasizes high quality design and sound planning practices tailored to Lone Tree's unique characteristics and vision.

The purpose of these guidelines and standards is to provide landscape architects, engineers, metropolitan districts, and City staff with a clear understanding of the City's expectations for the planning, design, review, and maintenance of landscaping within sites, along public rights-of-way, and for water capture areas in the City of Lone Tree. These guidelines and standards allow for dialogue during project review and are not meant to limit creativity and innovation, but to meet the overall intent as provided below.

The intent of these guidelines and standards is to:

- Accentuate the unique natural identity and environment of Lone Tree and encourage attractive landscapes and streetscapes utilizing horticultural and landscape design best practices;
- Promote sustainable landscapes that align with xeriscape principles, support plant survivability and minimize plant replacement costs; and promote the design, installation and maintenance of sustainable landscapes aligned with Xeriscape principles to support improved plant growth and survivability, while minimizing plant replacement costs; and
- Enhance public safety by utilizing design to separate vehicular and pedestrian traffic and by preventing crime by limiting areas of concealment.

Xeriscape Principles

Lone Tree falls within hardiness zone 5b and is located in high, semi-arid plains that receive a yearly average of 15 inches of rain, or less. The City is committed to water conservation and promotes application of the following xeriscape principles:

- **Planning and design.** Develop a plan that accounts for the regional climate, as well as any micro-climates (e.g., extent of shade provided on site; direction faced by landscaping, such as west facing; planting locations, such as toe of slope, etc.), existing vegetation and topography, the proposed use of the property, and that groups plants by hydrozones based on their watering needs.
- **Soil Analysis and Amendments.** Analyze several samples of soil to determine the level of compaction and the soil type(s) of the site so that appropriate amendments can be added. Soil amendments will aid plant growth by improving water penetration and retention.
- **Appropriate Plant Selection.** Select and group plants based on their adaptability to the site, their water use, and their design characteristics. Plant selections should be varied to provide year-round visual interest. Utilize native and/or very low to moderate water use plants.
- **Practical Turf Areas.** Limit the use of high-water turf and avoid using turf on narrow areas and/or steep or exposed south-facing slopes where irrigation will be inefficient and mowing difficult.
- **Efficient Irrigation.** Irrigate only when plants need it and irrigate deeply to encourage root growth for a healthier, more drought tolerant landscape. Grouping plants into hydrozones by water need will allow the most water-efficient design for an irrigation system. Irrigation should occur at a time of day that minimizes evaporative water loss and/or excessive runoff. Management of the system is as important as its design.
- **Use of Mulches.** Apply and maintain organic mulches in planting beds to assist soils in retaining water, reducing weed growth, and preventing erosion. Rock mulch is discouraged in planting beds except on steep slopes, high wind areas, or hard-to-access areas, as the rock heats the soil and can retard plant growth.
- **Proper Maintenance.** Preserve the beauty and water efficiency of the landscape through regular mowing, pruning, weeding, mulching, and irrigation system maintenance, with special attention to the winter watering of trees during dry months.

Approval and Inspection Process

The intent of this process is to ensure the thorough and efficient processing of landscape and irrigation plans by the City, and to provide the applicant with clear direction and a voice in the design process. Review and approval processes vary depending on the application type, as noted below.

Community Development staff will inspect landscaping installations once complete to ensure they adhere to the approved plans. The applicant, at the applicant's cost, will be responsible for removing/amending any landscaping installations not in adherence with approved landscape plans. Any changes to the approved landscape and/or irrigation plans, or to existing landscaping installations, must first be approved by the Community Development Department

1. Associated with SIP Applications:

- Landscape and irrigation plans are a required component of SIP applications and must be submitted with the application. The complete application, to include the landscape and irrigation plans, is reviewed by staff, sent out on public referral, and, depending on the type of SIP application, may be presented to the Planning Commission and City Council during public meetings for consideration and approval. Please consult Chapter 16 of City Code for additional details on this process.

2. Associated with Subdivisions:

- Landscape and irrigation plans associated with single-family detached development shall be submitted to the Community Development Department; will be reviewed for completeness and sent on referral. The plans require consideration by the Planning Commission and approval by the City Council at public meetings as further detailed in the Municipal Code for subdivision applications

3. Associated with ROW and WCA:

- For ROW and/or WCA projects that are not part of an SIP or subdivision application, the applicant shall submit an electronic file of the landscape and irrigation plans as a supplement to the civil plans. The Public Works department will review the plans and refer them to the Community Development Department for review. Following staff review, the plans may be sent out on public referral, as determined by the Community Development Department. Once deemed to be in conformance with City codes and Design Guideline and Standards, the plans may be approved administratively by the Community Development Director.
- The applicant will discuss review comments and suggestions with Public Works and Community Development staff. The applicant will make changes to the plans, as required, and resubmit plans to the applicable City department. The City will review the revised plans and notify the applicant once approved.



The landscaping on this site use low lying plantings that help compliment the adjacent art pieces and ensure visual interest throughout the whole planting area.

Submittal Requirements

Qualifications to Prepare Landscape Plans

Landscape plans shall be prepared and stamped by a landscape architect licensed with the State of Colorado per, Section 12-45-117, C.R.S.

Narrative

For those landscape plan applications that are NOT part of an SIP or subdivision application, a project narrative is required. The narrative should identify what landscaping is proposed and should describe how the landscape design and plant selections meet the intent of these Design Guidelines and Standards and the xeriscape principles.

Submittal Requirements for Landscape Plans

The landscape plans shall be submitted in conformance with the following plan requirements:

1. Prepare the landscape plan at a scale of 1" = 40' or 1" = 20' or another scale approved by staff, which allows for maximum clarity of the proposal and is the same scale as the grading plans.
2. Include a graphic scale and north arrow, site boundaries, and setbacks as applicable.
3. Label areas to be maintained in a natural state. Include areas square footage and label the existing vegetation to remain, with size and species indicated. Identify any existing native or invasive species that need to be removed. Label any wildlife habitat and landscape features to be preserved and improved.
4. Label all finished grades (existing or proposed) with a 3:1 slope or greater.
5. Identify and dimension all proposed berms.
6. Label by name and dimension all streets, rights-of-way and points of access on or adjacent to the proposed site. Traffic boxes shall be labeled.

7. Label sight distance triangles and site easements in accordance with the City's adopted Roadway Design and Construction Standards.
8. Dimension pedestrian walkways and pedestrian-oriented areas (existing and proposed), with type of surface noted.
9. Label all easements, existing or proposed underground dry and wet utilities, and associated structures.
10. Label hydrants, exterior water, gas and electric meters, ground-mounted HVAC equipment, transformer boxes and other utility fixtures.
11. Label elements including fences and walls (including maximum and minimum height), border edge treatments, monument signs, lighting, and water features.
12. Label the dimensions of tree lawns, tree wells, raised planters, lawns and ground cover areas; distinguish between perennial and annual planting areas. Provide area dimensions and planting details.
13. Include a plantings chart that lists the plant symbol, quantity, percentage of total plantings (biodiversity requirement), hardiness zone, hydrozones (if applicable), botanical and common names, size at planting, size maturity (height and width), water use (very low, low, medium, and high), pet waste and salt tolerance, and special notes (e.g. balled and burlapped). Include the type, depth, and total square footage of mulch and cobble areas and soil amendments. Provide the total square footage (for the entire site) of the natural/native areas to be maintained, turf areas, planting areas, cobble areas and hardscape.
14. Label bike racks, trash enclosures, trash & recycling receptacles, pet waste stations, street furniture, recreational facilities, and other site amenities and furnishings as applicable.
15. Locate and label all outdoor storage and display areas, if applicable.
16. Locate and label off-street parking (including ADA spaces and access aisles), and loading areas, snow storage areas, and surfacing materials.
17. Identify Special Flood Hazard Areas.
18. Include required plan notes from Appendix B.

Sample of a Landscape Chart

Symbol	Quantity	Botanical Name	Common Name	Size	Notes
Trees					
HL	6	<i>Catalpa erubescens</i>	Western Catalpa	2.5" caliper	Balled and burlapped; guy and stake
BS	7	<i>Picea pungens</i>	Blue Spruce	10' height	Balled and burlapped; guy and stake
Total	13				
Shrubs					
RB	10	<i>Berberis thunbergii</i> <i>Atropurpurea</i>	Red Leaf Barberry	5 gallon	3.5' width
RTD	5	<i>Comus sericea</i>	Redtwig Dogwood	5 gallon	
Total	15				
Mulch	300 sq. ft.	—	Pine Bark Mulch	4" depth	—

Figure 1. Landscape Chart

Submittal Requirements for Irrigation Plans

The Irrigation Plan shall be submitted concurrently with the Landscape Plan and in conformance with the following plan requirements:

1. Prepare the irrigation plan at a scale of 1" = 40' or 1" = 20' or another scale approved by staff, which allows for maximum clarity of the proposal and is the same scale as the landscape plans.
2. Label the separate valve zones (hydrozones) and the type of irrigation proposed for each hydrozone. Hydrozones within the landscape site are to be established based on the location of plants with similar water use requirements, slope aspect, and sun/shade micro-climates.
3. Label method of water application (drip, spray, etc.).
4. Label the location of the master valve and backflow preventer(s).
5. Label the location and type of weather-based smart controller(s) or similar.
6. Label the location of the rain/freeze sensor that will override the irrigation cycle of the system.

General Provisions (GP)

The following are landscape design guidelines and standards that apply to ALL landscape applications. Please refer to the design guidelines and standards for SIP, ROW & WCA for additional standards that may apply to your application.

I. Plant Selection

Standards

GP-A. Conform to basic plant specifications.

All plants shall conform to the American Nursery Association specifications for measurements, grading, branching, quality, and ball and burlapping, and shall be of sound health, vigorous growth and free from insect pests, diseases and injuries.

GP-B. Select plants for biodiversity.

To promote biodiversity and plant health, no one plant genus shall make up more than twenty-five percent (25%) of the total non-turf plant material on site.

GP-C. Prohibited plant materials.

- a) The City shall not allow trees on the City's list of prohibited trees (see Appendix C). The City may disallow other trees deemed to be invasive, prone to disease, or water intensive.
- b) Trees with thorns or acorns shall not be planted within 20-feet of public walks or gathering areas such as plazas. Thorny plant materials shall not be located within 4-feet of public walks or gathering areas.

GP-D. Select plants for water conservation.

With the exception of flower boxes, potted or hanging plants, and annuals located at site or subdivision entryways, all trees, shrubs, and perennials shall be selected that have very low, low, or moderate water usage needs.

GP-E. Select turf for water conservation and use.

Native or drought-tolerant turf grasses are allowed in all turf areas. High-water turf species shall only be allowed where the land use requires more resilient turf, such as in play areas, sports fields and other high-traffic uses as dictated by approved SIPs. High-water turf shall not be permitted in tree lawns, medians, roundabouts, rights-of-way, or other passive landscape areas. High-water turf requires one and one half (1½) inches of water or more per week to survive and includes, but is not limited to, species such as Blue Grass and Tall Fescue.

Standards (contd.)**GP-F. Turf and slopes.**

Irrigated turf shall not be allowed on slopes with a 3:1 gradient or steeper, or on any design configuration that cannot be irrigated efficiently. Groundcovers, shrubs or trees irrigated with drip irrigation are acceptable, as are drought-tolerant grasses with temporary irrigation for areas with a slope of 3:1 or greater.

GP-G. Planting next to curbs.

Plantings adjacent to parking areas shall be protected by buffers of mulch, low-profile groundcovers or paving.

GP-H. Use of artificial landscape materials.

Artificial landscape materials such as plastic trees, shrubs and flowers are prohibited. See SIP-D for exceptions that may apply to SIPs.

Guidelines**GP-1. Select plants for site adaptability.**

Items to consider include the regional climate (generally Hardiness Zone 4 or 5), micro-climates, soils, sun exposure, moisture requirements, slope, and maintenance obligations.

GP-2. Select and locate plants to allow for mature growth.

Consider the location of structures, signs, parking areas, fire hydrants, utility boxes, easements, etc. Locate plantings to prevent encroachments and conflicts and to provide adequate space for trees and shrubs at full maturity.

GP-3. Select plants for artistry and seasonal interest.

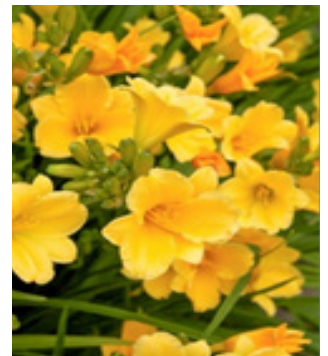
Create layered compositions of plant materials with varied heights, colors and textures. Select a mix of deciduous and evergreen trees, shrubs, and ornamental grasses to provide color and screening during winter months.

GP-4. Select plants for buffering purposes.

Use plants to visibly separate one use from another and to shield or block noise, lights, or other nuisances. Trees larger than the required minimum size provided in these standards may be required for buffering purposes.

GP-5. Select plants with safety in mind.

Balance the need for buffering and separation with the need to avoid areas of concealment for safety purposes.



Stella D'Oro Daylily is a low-water perennial that does well in streetscapes

II. Plant Location

Standards

GP-I. Group plants based on irrigation needs.

Plants with similar water needs shall be grouped in hydrozones to minimize water waste.

GP-J. Tree setback from hard surfaces.

Trees shall be planted no closer than 4 feet from the back of curbs or sidewalks, driveways and other hard surfaces to buffer trees from stress caused by salt, snow piling, vehicle overhang and compacted soils, and to allow trees to mature without buckling hard surfaces.

GP-K. Plant location and infrastructure.

Trees and shrubs shall be planted to prevent the obstruction of signs, lights, utility boxes, fire hydrants and other public or utility infrastructure. Trees shall not be planted in utility easements unless permitted by the utility company.

III. Minimum Plant Quantity and Size

Standards

GP-L. Except as otherwise provide herein, or in an approved Planned Development, Sub-Area Plan or Preliminary plan, the required quantity of plant materials shall be determined based upon the proposed land use, project design, adjacent uses and overall impact and scale.

GP-M. Minimum plant size at installation shall conform to the standards below, unless otherwise approved by the City. In some instances, larger plant sizes may be required.

- (a) Canopy trees: 2-inch caliper.
- (b) Deciduous and ornamental trees with a single trunk: 2-inch caliper and for multi-stemmed trees: a minimum height of 6 feet.
- (c) Evergreen trees: 6 feet in height.
- (d) Evergreen and deciduous shrubs and vines: 5-gallon size.
- (e) Ornamental grasses: 5-gallon size

Standards (Contd.)

- (f) Ground covers and perennials: minimum 1-gallon size; spacing should provide 80 percent ground plane coverage within 2 years.
- (g) Flower seeds in lieu of container plants are not permitted.

IV. Soil Amendments and Mulch**Standards****GP-N. Soil amendments.**

All soils for general landscaping or where any cool-season lawn, turf or sod is to be installed shall be amended with organic compost. Incorporate a minimum of 4-cubic yards of compost per 1,000-square feet to a depth of at least 4 inches by rototilling or other suitable means. Soil amendments for native plants and grasses are not required.

GP-O. Organic mulch shall be applied and maintained to a depth of 3-inches in all non-turf planted areas. Use fibrous, shredded bark mulch as it holds together better to prevent removal by windy conditions. Exceptions may be made by the City to accommodate for erosion control adjacent to drainage and/or water quality infrastructure, or for areas of excessive wind exposure. A minimum of 75% of all mulched areas shall be designed to have non-tree vegetation such as shrubs or ground cover.

GP-P. Inorganic Mulch

Rubber mulch is prohibited. Rock shall not be permitted around plants because it raises the overall soil temperature and is generally detrimental to plant growth. In select circumstances the City may permit inorganic mulches around plants in steep slope areas, in high-wind areas, or in areas difficult to access for maintenance purposes. Where rock mulch is permitted, intersperse mulch with rocks of larger sizes to naturalize the landscape.

GP-Q. Weed Barriers

Impermeable barriers, such as plastic, shall not be permitted.

Guidelines

GP-6. Mulch should be carefully selected in areas that may be susceptible to washout, such as near stormwater inlets, landscape drains and/or area drains. These areas require review and approval by the City Engineer to ensure the mulch selected is appropriate for the location.

V. Irrigation

Standards

GP-R. When irrigation is required.

A permanent, functioning, automatic irrigation system shall be required in all cases. Hand watering may be used for plantings in flowerpots or flower boxes; temporary irrigation may be required for two (2) seasons for the establishment of native grasses and vegetation.

GP-S. Irrigating for water conservation.

- Irrigation shall be on separate valve zones (hydrozones) based on water use requirements, slope aspect, and sun/shade micro-climates.
- Drip systems are required for low-volume application systems.
- Smart controllers and rain/freeze sensors are required.
- Spray heads must minimize over-spray to non-pervious areas such as sidewalks, buildings, parking lots, and roadways.
- Automatic irrigation controllers must have repeat cycle capability to permit moisture to penetrate into the soil and prevent runoff into stormwater systems.

GP-T. Setting appropriate irrigation schedules.

With the exception of watering for new plant establishment, irrigation shall be set for nighttime or early morning to minimize evaporative loss and reduce conflicts with pedestrians. Winter watering of trees shall be provided monthly for the first three years, and in subsequent years during drought periods, as designated by the National Integrated Drought Information System.

Guidelines

GP-7. Irrigation systems based on plant requirements.

Shrubs and trees should be irrigated by drip or bubblers. Annual, perennial, ground cover, and turf areas may be irrigated with fixed or pop-up spray heads.

VI. Retaining Walls

Please refer to the Design Guidelines and Standards for Architecture and Site Planning for provisions related to retaining walls.

Site Improve Plan (SIP) Landscape Design Guidelines and Standards

These guidelines and standards provide direction for developing landscape plans that will be submitted with SIPs. These guidelines and standards are in ADDITION to the General Provisions stated previously.

I. SIP Additional Provisions for Landscaped Areas

Standards

SIP-A. Minimum landscaped area.

(a) The minimum area to be landscaped shall be 15 percent of the gross site area, except as otherwise governed by specific landscape standards applied to a site via a zone or planned development district, development/framework plan or sub-area plan.

(b) Public plazas and other open space gathering areas may be counted toward the minimum landscaped area requirement, as approved through the SIP process; however, interior planted parking islands, sidewalks and trails shall not be counted toward the 15 percent minimum requirement.

(c) Additional landscaping may be required when screening or buffering is desired to mitigate impacts, provide transitions with natural areas, or to enhance the building architecture.

(d) For undeveloped portions of the site with natural vegetation, up to 30 percent of the natural area may be allowed to count toward the 15 percent minimum requirement, as determined by the Director. The percentage of these areas eligible to partially satisfy the 15 percent minimum requirement will be determined based upon its effectiveness to function as a buffer and enhance the visual attributes of the site.

SIP-B Responsibility for landscaping adjacent to rights-of-way.

Unless otherwise provided by a metropolitan district or other authority, where the property line does not extend to the curb of adjacent rights-of-way, the applicant shall be required to extend appropriate landscaping to the curb and maintain this landscaping in order to prevent gaps of unimproved areas along roadways and to enhance the appearance of the overall project and surrounding areas.

SIP-C. Dog relief areas.

Dedicated dog relief areas are required for multi-family developments. Tree lawns, play areas and other public spaces shall not be used to satisfy this requirement.

II. SIP Additional Provisions for Plant Selection

Standards

SIP-D. Synthetic turf.

Synthetic turf is prohibited except where allowed for athletic or recreational facilities at public or private schools and recreational areas, and in limited areas such as enclosed plazas and courtyards. Artificial turf may be permitted in select instances when properly screened and when supported by a pet waste flushing system approved by the City Engineer.

SIP-E. Select plants tolerant of pet waste.

For all multi-family developments, parks, and land uses involving pet activity (ex. Veterinarian office or grooming/boarding facility), the landscaping adjacent to primary exits and sidewalks must be resilient against pet waste. See Appendix D for plant guide.

SIP-F. Select plants tolerant of snow storage.

Use salt tolerant plantings for any landscaped areas that will be impacted by snow storage. See Appendix D for plant guide.

Guidelines

SIP-1. Select edible plants where appropriate.

Incorporate trees and shrubs into the landscape that have edible fruit along with planting edible flowers that are adaptable to the site. Edible plants are encouraged near parks and multi-family developments.

III. SIP Additional Provisions for Plant Location

Guidelines

SIP-3. Use landscaping strategically to enhance the project design.

Design landscaping to create and reinforce visual gateways and important views, define and enhance outdoor spaces, highlight pedestrian paths, and create destination focal points to and around the site. Locate and select landscaping to provide shade and human comfort in public spaces and parking lots, enhance building architecture, and define transitions and interconnectivity between public and private spaces.

SIP-4. Plant for sun and shade.

Plant deciduous trees to shade the west, south and east sides of buildings to provide shade in summer, and evergreen trees to provide winter windbreaks on the west and north edges of the site or building. Consider how trees may shade pedestrian walkways during winter months and avoid creating/exacerbating icy conditions on sidewalks and paths.

SIP-5. Safety.

Landscaping should be used to effectively enhance or screen elements of a project, as appropriate, but should not interfere with reasonable surveillance of plazas or other gathering spaces, parking lots, entries, service areas, ATMs, and similar pedestrian areas. When adjacent to parking structures, locate foundation plantings a minimum of 10-feet from the building in order to maintain clear sight lines and prevent hiding places and ambush points.

SIP-6 Edible Plants

Edible plants should be located a minimum of 10 feet from roadways and parking spaces.

SIP-7 Screening.

Buffering or screening of service areas, loading docks, utility pedestals and similar site and building features may consist of trees, shrubs, or other plant materials, walls, fences, earthen berms or a combination thereof.

SIP-8. Minimize isolated islands of landscaping.

Small, isolated islands of landscaping should be avoided, except as required in parking lots and for screening along roadways.

SIP-9. Vegetated roofs.

Vegetated roofs are encouraged to reduce heat-island effects, capture stormwater flows, provide insulation (resulting in heating and cooling reductions), and protect roofs from hail damage. A combination of sedums and grasses do well in this environment.

This vegetated roof is easy to access for maintenance purposes and provides environmental and economic benefits.



Standards

SIP-G. Plant setback from utilities.

To allow for maintenance, plants shall be located so, at their mature width, they will be no closer than 5 feet from the opening of utility boxes or ground mounted HVAC systems.

SIP-H. Tree planting in constrained areas: tree grates and wells.

Tree vaults are prohibited. Tree grates and tree wells may be permitted in select instances. When approved, tree wells must use structured soil to minimize compaction and allow the roots to breathe. Structured soil must include a mix of clay and organic matter according to the CU-Structural Soil standards; soil must be interspersed with 3/4 - 1 1/2 inch angular granite rock.

IV. SIP Provisions for Parking Lot Landscaping

Standards

SIP-I. Landscape island locations.

Landscape islands shall be placed at the end of surface parking bays. Surface parking bays shall extend no more than fifteen (15) parking spaces without an intervening canopy tree(s) in an interior landscape island or landscape peninsula. Additional and/or alternative parking lot landscaping may be required by the City to provide adequate reduction in the heat-island effect, visually interrupt expansive areas of pavement, delineate interior vehicular and/or pedestrian circulation ways, and promote tree health.

SIP-J. Dimensions and planting of landscape islands and peninsulas.

Landscape islands and peninsulas shall be a minimum of 8 feet wide. Landscape islands shall be the length of the adjacent parking spaces. Landscape islands and peninsulas must have one (1), two-inch caliper canopy tree, along with shrubs and/or ornamental grasses, and one acceptable groundcover and mulch.

Guidelines

SIP-10. Additional landscaping in surface parking areas.

Additional landscaping may be required to include medians and pedestrian walkways.

SIP-11. Screening of parking lots.

In order to screen parking lots from streets and/or adjoining land uses, the City may require 3 to 4 foot tall landscaping and one, or a combination of, the following: (1) decorative wall(s), (2) earthen berm(s) with slopes no greater than 3:1, (3) fencing. Maximum screening heights may be required when necessary to promote safety and security.

SIP-12. Bioretention / rain gardens.

The use of planting strips and shallow landscaped depressions in parking lots is encouraged to help trap and remove pollutants from stormwater runoff, as approved by the Public Works Department and the Community Development Departments.

Right-of-Way (ROW) Landscape Design Guidelines and Standards

These guidelines apply to areas in and along ROWs (see the Applicability section in the Introduction for a complete definition of these areas) and provide direction for developing these landscaping plans, which are generally submitted with construction plans for ROW. These guidelines and standards are in ADDITION to the General Provisions stated previously.

I. ROW Provisions for Plant Selection

Standards

ROW-A. Provide a mix of species in and along the ROW.

No one plant genus shall make up more than twenty-five percent (25%) of the total non-grass plant material within a block, or other planning area, as determined by the City.

ROW-B. Unprotected Plantings

Unprotected plantings within 3 feet of roadways shall be salt tolerant. Please refer to recommended plantings in Appendix D.

Guidelines

ROW-1. Consideration of form.

Trees on both sides of the ROW should have similar characteristics (form, character and spacing patterns) on both sides of the street.

ROW-2. Continuous canopy.

At full maturity, residential street trees should form a continuous canopy to reinforce the street space and frame vistas.

ROW-3. Tree replacement in ROW.

When replacing trees in an existing ROW, select new trees of similar characteristics to those being replaced, including form, scale, texture and color.

ROW-4. Minimize isolated islands of landscaping.

Small, isolated islands of landscaping should be avoided, except as required for screening along roadways.

II. ROW Provisions for Plant Location

Standards

ROW-C. Trees and sight distances.

- Trees shall not be planted closer than 30-feet from the intersecting curb face at intersections and street corners within the corner sight triangle.
- Trees shall be located no closer than 15-feet from the alley entrances.
- Trees shall not be planted in sight distance easements or in any way that impedes sight visibility in and along the ROW.
- No plantings higher than 24 inches above adjacent flowline allowed within site triangle.

ROW-D. Trees planted near light poles.

Trees shall be planted no closer than 20-feet from street light poles. Individual site conditions may warrant an exception if approved by the City Engineer and utility provider.

Guidelines

ROW-5. General considerations in locating plants in and along the ROW.

Consider factors affecting landscape design along streets, including use by pedestrians, the size and orientation of sidewalks, the distance from trees to buildings and fixtures, the visibility of commercial facades and signs, snow plowing and snow storage, and the speed and volume of vehicles.

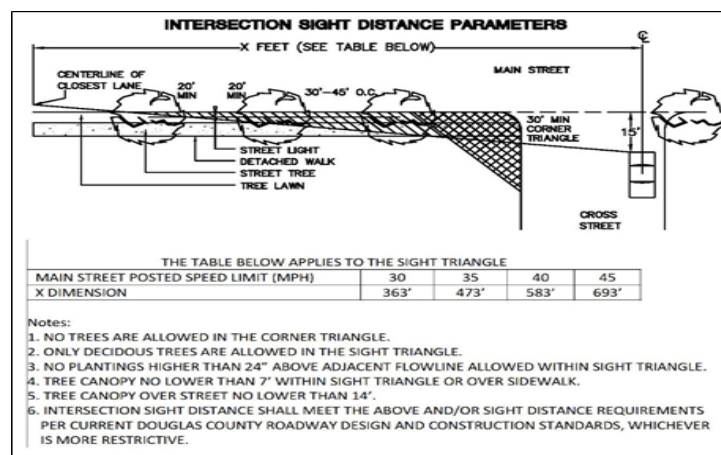


Figure 2. Sight Distance Triangle

III. ROW Landscape Design for Tree Lawns

Standards

ROW-E. Tree lawn width.

Tree lawns shall be 8 feet wide, with trees planted no closer than 4 feet from back of curb and no closer than 4 feet from back of sidewalk to provide adequate space for street trees to grow.

Guidelines

ROW-6. Desired trees in tree lawns.

Canopy trees in the tree lawns are recommended.

ROW-7. Tree spacing in tree lawns.

Create a continuous street edge with 1 deciduous canopy tree spaced regularly every 40-linear feet midway between curb and walk (even where the width of the tree lawn varies). Slightly greater or reduced spacing may be appropriate depending on the space and species, and as adjusted for curb cuts, lights, fire hydrants, signage, etc.

IV. ROW Landscape Design for Trees in Hardscapes

Standards

ROW-F. Fencing around tree wells.

Fencing is allowed around tree wells. In areas where parking is not allowed on the street, tree wells must be set back a minimum of 18-inches from the curb to provide room for snow storage. Where parking is allowed on the street, tree wells must be set back a minimum of 30-inches from the curb, such that doors of parked cars do not hit the fence when passengers disembark.



Standards (contd.)

ROW-H. Tree lawn variations along urban ROW in dense urban areas.

While tree lawns are the preferred option, where ROW is limited, the City may permit narrower tree lawns. When such a reduction is permitted, the tree lawn shall consist of a minimum 5-foot wide, 8-foot long opening around the tree, with porous pavers in the areas between the trees, and an 18" curb depth to protect landscaping and provide some snow storage. Pavers should be of a character and quality that enhances the streetscape.

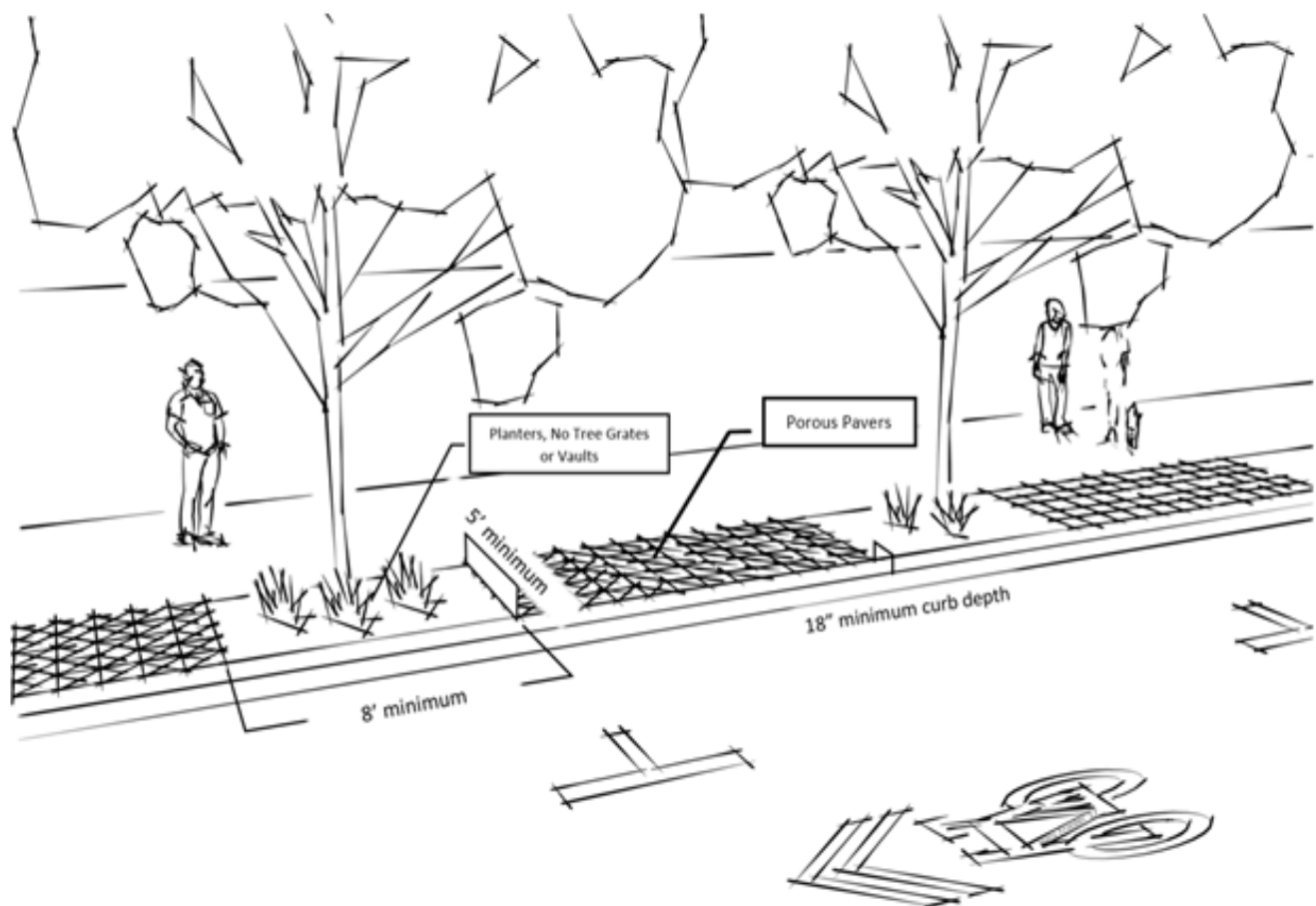


Figure 3. Example of tree lawn along urban ROW

V. ROW Landscape Design for Medians

Standards

ROW-I. Minimum median dimensions and planting requirements.

(a) Planting areas in the medians that include trees shall be a minimum of 10 feet wide and a maximum of 14-feet wide in order for trees to thrive (distance measured from back of curb to back of curb). Canopy trees shall be planted no closer than 4-feet from the back of curb and evergreens shall be planted no closer than 7-feet from the back of curb.

(b) Planting areas in medians that do not include trees shall be a minimum of 6-feet wide in order for shrubs to thrive (distance measured from back of curb to back of curb).

(c) Medians less than 6-foot are allowed where perennials are planted.

ROW-J. Site triangle limitations.

Median landscaping shall not have plantings higher than 24-inches within the sight triangle, as defined by the City Engineer.

Guidelines

ROW-8. Median plants.

Tree, shrubs and groundcover plantings should be included in medians to allow for variety and attractive streetscapes. Select species that require minimal maintenance.

VI. ROW Landscape Design for Roundabouts

The purpose of landscaping in the roundabout is to:

- Make the central island conspicuous to drivers as they approach the roundabout
- Clearly indicate to drivers that they cannot pass straight through the intersection
- Require motorists to focus toward on-coming traffic from the left
- Help break headlight glare
- Discourage pedestrian traffic through the central island
- Help visually impaired pedestrians locate sidewalks and crosswalks
- Improve and complement the aesthetics of the area

Standards

ROW-K. Sight distances, as determined by the City Engineer, shall be maintained.

ROW-L. The following items are prohibited and shall not be planted/placed within the central island:

- a) Fixed objects such as concrete, stone/boulders, walls, monument signs, poles and trees having a mature diameter greater than 4-inches.
- c) The City's standard approach to central-island landscaping is to mound the earth and install plantings. (a) When mounding the central island, the slope of the central island shall have a minimum grade of 4% and a maximum 6:1 slope upward toward the center of the circle. (b) The soil/fill surface in the central island must form an earth mound that is a minimum height of 3.5-feet, and shall not exceed 5-feet in height, as measured from the circulating roadway surface at the curb flange. (c) The outermost 6 feet of the central island adjacent to the roadway shall be designed and maintained to be free from flowers, shrubs, tall grasses and trees to provide roadside safety, snow storage and unobstructed sight distance.

- d) Low-to-the-ground landscape plantings in the splitter islands (see figure 4) and approaches both benefits public safety and enhances the visual quality of the intersection and the community. Unless approved by the City Engineer, splitter islands shall not contain trees, planters, or light poles.

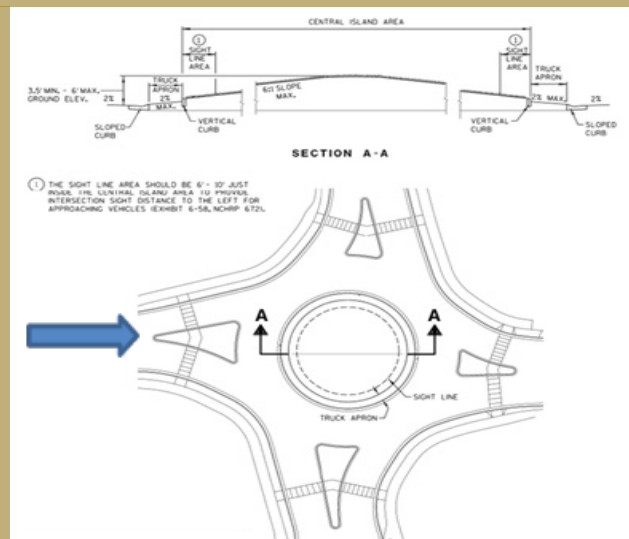


Figure 4. Example of splitter island

Guidelines

ROW-9. Roundabout Design

1. Design landscaping to minimize the maintenance requirements.
2. Avoid obscuring the view of signs.

ROW-10. Attractive Nuisances

To minimize driver distraction, avoid items in the central island that may distract drivers or that may encourage pedestrians to enter the central island for pictures, etc. Decorative features that should be avoided include, but are not limited to, water features/fountains, artwork and signs/plaques/flags.

VII. ROW Maintenance of Trees and Shrubs**Standards****ROW-M. Maintenance of trees and shrubs near intersections.**

Existing trees and shrubs shall be maintained near intersections so as not to obstruct or interfere with views or sight lines. Private property owners with landscaping in these areas should consult with the Community Development Department and City Engineer to verify and correct problems.

ROW-N. Maintenance of canopy trees over walkways.

The branching height of mature trees adjacent to pedestrian walkways shall be no less than 7-feet above the sidewalk or pedestrian path. Upon planting, trees shall be pruned to eliminate any hazards to pedestrians.

ROW-O. Maintenance of canopy trees over ROW.

Tree canopies extending over a public roadway shall be maintained to have a minimum canopy of 14-feet above the roadway and shall be trimmed so as not to impede into the roadway area.

ROW-P. Sight Triangle Planting and Maintenance.

Minimum sight triangle and corner triangle distances (as designated by the City Engineer) shall be maintained free of obstructions that may impede the safe viewing of oncoming traffic and pedestrians. Within the sight triangle, no objects higher than 24-inches about the adjacent flowline shall be permitted except for deciduous tree trunks and canopies. Trees within the sight triangle shall be maintained to ensure tree canopies extend no lower than 7-feet.

Water Capture Areas (WCA) Landscape Design Guidelines and Standards

These guidelines and standards provide direction for developing landscape plans specific to WCAs. These guidelines and standards are in ADDITION to the General Provisions stated previously.

I. Provisions for Landscape Design, Use, and Maintenance of Stormwater Detention and Water Quality Basins.

Guidelines

WCA-1. Naturalize the design.

Accommodate storm water detention in ways that integrate ponds to provide visual cohesion with the site.

- (1) Design detention basins so they appear as part of the natural landscape in open space or park settings; include randomness of form, soft edges, and varying slopes inherent in nature. Curvilinear (non-rectangular) design is preferred.
- (2) Use a berm or other natural landform to extend one side of the basin higher than the other.
- (3) Create an irregular form by shaping the slope of one side at a lesser angle than the opposing side.
- (4) When adjacent to public spaces and/or pedestrian walkways, design ponds with gradual slopes, as opposed to deep ponds that need fencing. Where fencing is allowed by the City Engineer, use decorative fencing and walls lined with groupings of shrubs.
- (5) Minimize the visibility of structures such as forebays, inlets, and surface weirs by locating them in the sloped embankment where possible.

WQA-2. Consider multi-use.

Design water basins in ways that encourage multiple uses. This can be achieved by placing trails and benches around the perimeter to promote passive recreation, such as wildlife viewing, or, when approved by the City Engineer, by designing such areas as sites for active play.

WQA-3 Design with maintenance in mind.

Provide maintenance access to water basins to accommodate trash and sediment removal, and to allow maintenance equipment to safely reach the bottom of the basin with adequate space to operate and turn around.



This regional detention pond is located in a public plaza, providing visitors views of a natural green space in an otherwise urban environment.



This picnic shelter is located in a regional detention pond, with opportunities for visitors to play frisbee golf.



This playground is located on the fringe of a regional detention pond, and can withstand inundation by stormwater runoff. A rubber mat is recommended in lieu of bark or rock to minimize maintenance costs during flood events and to provide a safe surface for children.

II. Provisions for Landscape Design of Bioretention Areas (rain gardens)

Bioretention areas are planted depressions that absorb stormwater runoff from impervious urban surfaces like roofs, driveways, walkways, and parking lots.



Example of plantings in a bioretention area along rights-of-way.

Guidelines

WQA-4. The City encourages the use of bioretention areas along rights-of-way where appropriate, to enhance water quality, reduce dependency on irrigation water, and to create beautiful landscapes.

WQA-5. Supplemental irrigation to bioretention areas may be required during dry summer months to provide adequate water.

APPENDIX A

Definitions

Arterial or collector rights-of-way: Include such road classifications as set forth in the Douglas County Roadway Design and Construction Standards manual, as adopted by the City of Lone Tree.

City Engineer: the City's designated Director of Public Works or their designee as set forth by resolution or other City Council action, to perform the engineering functions for the City as set forth in this Chapter.

Deciduous: A plant with foliage that is shed annually.

Director: the City's designated Director of the Community Development Department as set forth by resolution or other City Council action, responsible for all matters regarding zoning and subdivisions, including zoning administration matters, as set forth in this Chapter.

Dripline: A line on the ground below the edge of the maximum overhead canopy of a tree.

Evergreen: A plant with foliage that persists and remains green year-round.

Ground cover: Plants other than turf grass, normally reaching an average maximum height of not more than 18-inches at maturity.

Hardscape: any non-living materials or structural site improvements, that may include, buildings, paving, walkways, walls, fences, arbors, patios, site furnishings, decorative rock, stones, and similar materials.

Hydrozone: A portion of a landscape area having plants with similar water needs that are either not irrigated or irrigated by a circuit or circuits with the same schedule.

Impervious Surface: any material which prevents, impedes, or slows infiltration or absorption of storm water directly into the ground at the rate of absorption of vegetation-bearing soils, including building, asphalt, concrete, gravel, and other surfaces

Invasive Plant Species: Introduced species that can thrive in areas beyond their natural range of dispersal. These plants are characteristically adaptable, aggressive, and have a high reproductive capacity. Their vigor combined with a lack of natural enemies often leads to outbreak populations, displacement of native plants, and dominance of native plant communities. Also, any plant species listed by the U.S. Department of Agriculture as a noxious weed in the State of Colorado is considered an invasive plant species.

Irrigation plan: A two-dimensional plan drawn to scale that shows the layout of irrigation components, component specifications, and hydrozones. Layout of pipes may or may not be depicted diagrammatically, but location of irrigation heads and irrigation schedules are specified.

Irrigation system: A permanent, constructed watering system designed to transport and distribute water to landscape plants.

Landscape plan: A plan drawn to scale that shows the layout of all landscape components and the specifications for a development site.

Landscape Architect: A person who is currently licensed in the State of Colorado to practice the profession of landscape architecture.

Median: The area of raised paving or planting running down the center of a street separating the directions of traffic.

Micro-climate: The climate of a specific place within a given area, or even within a specific site.

Mulch: Nonliving materials customarily used in landscape design to retard erosion, retain moisture, provide a protective covering around plants to reduce weed growth, and to maintain even temperatures around plant roots. Organic mulches include materials such as bark and wood chips; inorganic mulches include rock and artificial materials such as rubber.

Native Plant Species: a species that is indigenous within the region or State and naturally occurring in one or more plant communities

Organic Compost: A mixture that consists largely of decayed organic material and is used to fertilize soil.

Parking Lot Island: a landscaped area within the interior of a surface parking lot or the center of a roundabout which is completely surrounded by other hardscape surfaces and is typically intended to break up large areas of impervious surfaces.

Parking Lot Peninsula: a landscaped area that projects into the interior of a surface parking lot which is completely surrounded by other hardscape surfaces except where the peninsula connects to other landscaped areas, and is typically intended to break up large areas of impervious surfaces.

Rain/freeze sensor: A device connected to an irrigation controller that overrides scheduled irrigation when significant precipitation has been detected, or when temperatures drop below freezing.

Rain Garden: A landscaping features adapted to treat stormwater runoff which is directed into shallow vegetative depressions that allow filtration before the water enters the storm drain system. The feature may be designed to require little to no supplemental irrigation planted with drought tolerant plants well adapted to the local climate. These may be located in parking lot islands or within small pockets in residential land uses and may be under-drained or self-contained

Retaining Wall: any fence or wall built or designed to retain or restrain lateral forces of soil or other materials, said materials being similar in height to the height of the wall.

Right-of-way: Public dedicated land designated for streets, sidewalks, utilities and public use.

Roundabout: A traffic circle, where three or more roads join and traffic must go around a circular area in the middle, rather than straight across.

Shade tree: A deciduous (or rarely, an evergreen) tree planted primarily for its high crown of foliage or overhead canopy. A shade tree reaches a height of at least 50-feet.

Shrub: A self-supporting woody perennial plant of low to medium height characterized by multiple stems and branches continuous from the base, usually not more than 12 feet in height at full maturity. Shrubs may be evergreen or deciduous.

Sight Triangle: an area of land at the intersection of streets, or a street and a driveway, within which nothing may be erected, planted, placed, or allowed to grow in a manner which will obstruct the vision of motorists entering or leaving the intersection.

Site plan: A two-dimensional representation, drawn to scale, of the total area of the development project, including building footprints, roadways, and parking areas.

Soil amendment: Organic and inorganic materials added to soil to improve texture, nutrients, moisture-holding capacity, and infiltration rates.

Streetscape: That portion of the right-of-way typically located between a private property line and the curb or edge of the road.

Street tree: A tree planted in the streetscape or in the median to provide shade, spatial definition, human scale, and to enhance the street environment.

Tree: A large, woody plant having one or several self-supporting stems or trunks and numerous branches. It may be classified as deciduous or evergreen.

Tree Grate: a metallic grating installed at the same level with the pavement around a tree that allow tree roots to absorb air, sunlight, and water while protecting the soil from pedestrian traffic impact. Grates can provide a decorative element along public streets with the intent to contribute to the street's character

Tree lawn: The strip of land between the roadway curb or edge of road and sidewalk that is generally planted.

Turf/Turfgrass: Continuous plant coverage consisting of hybridized grass that, when regularly mowed, forms a dense growth of leaf blades and roots.

Vegetation: Plants in general or the sum total of plant life in a given area.

Water Capture Areas: Includes stormwater detention, water quality and bioretention infrastructure.

Xeriscape: A water efficient landscape adapted to the local environment.

Appendix B

Plan Notes

The following plan notes are required on all landscape plans. Additional plan notes may be required by the City on a case by case basis.

General

- The property herein is subject to all applicable requirements of Lone Tree Municipal Code, except as may otherwise be addressed in an approved Planned Development or Sub-Area plan, Site Improvement Plan, Preliminary Plan, Final Plat, or other improvements and/or maintenance agreements, as applicable.
- The applicant assumes responsibility to ensure the project is completed in accordance with the approved Landscape and/or Irrigation Plan and further assumes the risk associated with any changes or omissions made without prior City approval. Modifications to the landscape plan may require a landscape plan amendment as determined by the Director. Unauthorized changes or omissions may result in corrective actions, delay of permits, or citations for zoning violations with associated fines and legal measures.

Access

- The City of Lone Tree requires that maintenance access be provided to all storm drainage facilities to ensure the continuous operational capabilities of the system. The property owner shall be responsible for the maintenance of all drainage facilities, including inlets, pipes, culverts, channels, ditches, hydraulic structures and detention basins located on their land, unless modified by an improvements agreement. Should the owner fail to adequately maintain said facilities, the City of Lone Tree shall have the right to enter said land for the purposes of operations and maintenance. All such maintenance costs will be assessed to the property owner.

Maintenance Responsibilities

- It shall be the responsibility of the owner (or responsible association or district, as may be identified by maintenance agreements) to maintain all improvements on the property in a state of good repair, to ensure all irrigation is functional, and to ensure all plantings are alive, consistent with the approved landscape and irrigation plan and Lone Tree Municipal Code.
- Within sight triangles and sight easements, as shown, limited landscaping shall be allowed with no solid structures permitted, as stated in the City of Lone Tree's Landscape Design Guidelines and Standards. Landscaping within the sight triangle shall be maintained by the property owner or responsible association or district, as may be identified by maintenance agreements.

Appendix C

Prohibited Plant Materials

The following plants/trees are prohibited:

- All plant materials/trees listed within the Noxious Weed List, Categories A, B, and C, as published by the Colorado Department of Agriculture.
- Mexican Feather Grass (*Nassella Tenuissima*)
- Flower seeds (including wildflower seeds)

The following species of trees are prohibited in the right-of-way, and in areas in and along rights-of-way, as defined.

- Any of the poplar species (*Populus* sp.)
- Any of the willow species (*Salix* sp.)
- Box Elder (*Acer negundo*) – please note that the ‘Sensation’ variety is allowed in medians
- Siberian (Chinese) Elm (*Ulmus pumila*)
- Silver Maple (*Acer saccharinum*) or Autumn Blaze Maple (*Acer freemanii*)
- Fraxinus Ash trees, including Autumn Purple Ash, Empire Ash, Mancana Ash, Marshall’s Green Ash, or Patmore Green Ash
- Tree of Heaven (*Ailanthus altissima*)
- Any weeping or pendulous type tree
- Any tree with a bushy growth habit which cannot be maintained to a single leader or trunk (such trees may be planted in the medians where they do not impede visibility).
- Any tree which would obstruct, restrict, or conflict with the safe use of the right-of-way.

Appendix D

Planting Recommendations

Salt Tolerant Plants

The following plants are known to be salt tolerant. This list is not all inclusive; the City may consider additional salt tolerant plantings proposed by licensed landscape architects.

Trees				
Botanical Name	Common Name	Mature Height	Mature Spread	Water Needs
<i>Malus 'Prairifire'</i>	Crabapple (Prairie Fire)	20 Feet	20 Feet	Moderate/Low
<i>Gleditsia triacanthos</i> var. <i>inermis</i>	Honeylocust (thornless) Shademaster Variety	50-70 Feet	35-50 Feet	Moderate
<i>Gleditsia triacanthos</i> var. <i>inermis</i>	Honeylocust (thornless) Imperial Variety	30-35 Feet	25-35 Feet	Moderate
<i>Gleditsia triacanthos</i> var. <i>inermis</i>	Honeylocust (thornless) Skyline Variety	35-45 Feet	25-35 Feet	Moderate
<i>Gymnocladus dioica</i>	Kentucky Coffeetree	60-80 Feet	40-60 Feet	Moderate
<i>Syringa reticulata</i> 'Ivory Silk'	Ivory Silk Japanese Tree Lilac	20-25 Feet	15-20 Feet	Moderate
<i>Betula nigra</i> 'Heritage'	Heritage River Birch	40-80 Feet	40-60 Feet	High
<i>Ginkgo biloba</i>	Ginkgo	50-80 Feet	30-40 Feet	Moderate
<i>Picea pungens</i>	Blue Spruce	40-60 Feet	20-30 Feet	Low/Moderate
<i>Pinus nigra</i>	Austrian Pine	40-60 Feet	20-40 Feet	Moderate
<i>Acer miyabei</i>	Miyabe Maple	40 Feet	25 Feet	Moderate
<i>Acer</i> <i>pseudoplatanus</i>	Sycamore Maple	50 Feet	35 Feet	Moderate
<i>Celtis laevigata</i>	Sugar Hackberry	60 Feet	40 Feet	Moderate/High
<i>Celtis occidentalis</i>	Common Hackberry	60 Feet	45 Feet	Moderate/High
<i>Quercus alba</i>	White Oak	60 Feet	50 Feet	Low/Moderate
<i>Quercus macrocarpa</i>	Bur Oak	60 Feet	60 Feet	Low
<i>Ulmus Americana</i>	American Elm	70 Feet	60 Feet	Moderate

Shrubs				
Botanical Name	Common Name	Mature Height	Mature Spread	Water Needs
<i>Forsythia 'Cortasol'</i>	Forsythia Goldtide	1-2 Feet	1-4 Feet	Moderate
<i>Berberis thunbergii</i> 'Rose Glow'	Rose Glow Barberry	5 Feet	4 Feet	Moderate
<i>Physocarpus</i> <i>opulifolius 'Seward'</i>	Summerwine Ninebark	4-6 Feet	4-6 Feet	Moderate
<i>Juniperus scopulorum</i> 'Blue Arrow'	Rocky Mountain Juniper 'Blue Arrow'	12-15 Feet	2-3 Feet	Low
<i>Pinus mugo 'Palouse'</i>	Palouse Mugo Pine	6 Feet	6 Feet	Low
<i>Pinus mugo</i> 'Slowmound'	Slowmound Mugo Pine	3-5 Feet	5-7 Feet	Low
<i>Chrysothamnus</i> <i>nauseosus</i>	Rabbitbrush	2-4 Feet	2-6 Feet	Low
<i>Prunus pumila</i>	Sand Cherry	4-7 Feet	4-6 Feet	Low
<i>Yucca glauca</i>	Plains Yucca	3-4 Feet	3-4 Feet	Very Low

Appendix D

Planting Recommendations

Salt Tolerant Plants (contd.)

Grasses				
Botanical Name	Common Name	Mature Height	Mature Spread	Water Needs
<i>Bouteloua gracilis</i> 'Blonde Ambition'	Blond Ambition Blue Grama	2.5-3 Feet	2.5-3 Feet	Low
<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3-4 Feet	1.5-2 Feet	Moderate
<i>Elymus arenarius</i> 'Blue Dune'	Blue Dune Lyme Grass	2-3 Feet	2-3 Feet	Low

Flowers				
Botanical Name	Common Name	Mature Height	Mature Spread	Water Needs
<i>Ajuga reptans</i> 'Burgundy Glow'	Burgundy Glow Carpet Bugle	5-6 Inches	8-10 Inches	Moderate
<i>Hemerocallis x 'Stella de Oro'</i>	Stella D'Oro Daylily	1-2 Feet	1-2 Feet	Low
<i>Perovskia atriplicifolia</i>	Russian Sage	3-4 Feet	3-4 Feet	Low
<i>Allium cernuum</i>	Nodding Onion	1-1.5 Feet	4 Inches – 1 Foot	Low/Moderate
<i>Aster ericoides</i>	White Aster	1-3 Feet	1-3 Feet	Very Low
<i>Balsamorhiza sagittata</i>	Arrowleaf Balsamroot	8 Inches – 1.5 Feet	8 Inches – 1.5 Feet	Low
<i>Astragalus drummondii</i>	Drummond's Milkvetch	10 Inches – 3 Feet	6 Inches – 10.5 Feet	Very Low

Appendix D

Planting Recommendations

Pet Waste Tolerant Plants

The following plants are known to be pet waste tolerant. This list is not all inclusive; the City may consider additional pet waste tolerant plantings proposed by licensed landscape architects.

Trees				
Botanical Name	Common Name	Mature Height	Mature Spread	Water Needs
Malus 'Prairifire'	Crabapple (Prairie Fire)	20 Feet	20 Feet	Moderate/Low
Gleditsia triacanthos var. inermis	Honeylocust (thornless) Shademaster Variety	50-70 Feet	35-50 Feet	Moderate
Gleditsia triacanthos var. inermis	Honeylocust (thornless) Imperial Variety	30-35 Feet	25-35 Feet	Moderate
Gleditsia triacanthos var. inermis	Honeylocust (thornless) Skyline Variety	35-45 Feet	25-35 Feet	Moderate
Betula nigra 'Heritage'	Heritage River Birch	40-80 Feet	40-60 Feet	High
Ginkgo biloba	Ginkgo	50-80 Feet	30-40 Feet	Moderate
Picea pungens	Blue Spruce	40-60 Feet	20-30 Feet	Low/Moderate
Pinus nigra	Austrian Pine	40-60 Feet	20-40 Feet	Moderate

Shrubs				
Botanical Name	Common Name	Mature Height	Mature Spread	Water Needs
Forsythia 'Courtasol'	Forsythia Goldtide	1-2 Feet	1-4 Feet	Moderate
Berberis thunbergii 'Rose Glow'	Rose Glow Barberry	5 Feet	4 Feet	Moderate
Physocarpus opulifolius 'Seward'	Summerwine Ninebark	4-6 Feet	4-6 Feet	Moderate
Juniperus scopulorum 'Blue Arrow'	Rocky Mountain Juniper 'Blue Arrow'	12-15 Feet	2-3 Feet	Low
Pinus mugo 'Palouse'	Palouse Mugo Pine	6 Feet	6 Feet	Low
Pinus mugo 'Slowmound'	Slowmound Mugo Pine	3-5 Feet	5-7 Feet	Low
Chrysothamnus nauseosus	Rabbitbrush	2-4 Feet	2-6 Feet	Low
Prunus pumila	Sand Cherry	4-7 Feet	4-6 Feet	Low
Yucca glauca	Plains Yucca	3-4 Feet	3-4 Feet	Very Low
Prunus cerasifera	Purpleleaf Plum	6-8 Feet	4-6 Feet	Moderate
Cornus alba	Red Twig Dogwood	6-8 Feet	8-12 Feet	Moderate

Appendix D

Planting Recommendations

Pet Waste Tolerant Plants (contd.)

Grasses				
Botanical Name	Common Name	Mature Height	Mature Spread	Water Needs
<i>Bouteloua gracilis</i> 'Blonde Ambition'	Blond Ambition Blue Grama	2.5-3 Feet	2.5-3 Feet	Low
<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3-4 Feet	1.5-2 Feet	Moderate
<i>Elymus arenarius</i> 'Blue Dune'	Blue Dune Lyme Grass	2-3 Feet	2-3 Feet	Low

Flowers				
Botanical Name	Common Name	Mature Height	Mature Spread	Water Needs
<i>Ajuga reptans</i> 'Burgundy Glow'	Burgundy Glow Carpet Bugle	5-6 Inches	8-10 Inches	Moderate
<i>Hemerocallis x</i> 'Stella de Oro'	Stella D'Oro Daylilly	1-2 Feet	1-2 Feet	Low
<i>Perovskia atriplicifolia</i>	Russian Sage	3-4 Feet	3-4 Feet	Low
<i>Allium cernuum</i>	Nodding Onion	1-1.5 Feet	4 Inches – 1 Foot	Low/Moderate
<i>Aster ericoides</i>	White Aster	1-3 Feet	1-3 Feet	Very Low
<i>Balsamorhiza sagittata</i>	Arrowleaf Balsamroot	8 Inches – 1.5 Feet	8 Inches – 1.5 Feet	Low
<i>Achillea millefolium</i>	Western Yarrow	4 Inches – 2 Feet	2-3 Feet	Low/Moderate

Source for Plant Details:

Note – First deferred to CSU resources, but if plant type not available through CSU other sources were referenced.

<https://extension.colostate.edu/topic-areas/yard-garden/large-deciduous-trees-7-419/>

<https://extension.colostate.edu/topic-areas/yard-garden/small-deciduous-trees-7-418/>

<https://extension.colostate.edu/topic-areas/yard-garden/evergreen-trees-7-403/>

<https://extension.colostate.edu/docs/pubs/garden/07232.pdf>

<https://www.fcgov.com/vegetation/>

<https://www.missouribotanicalgarden.org/plantfinder/plantfindersearch.aspx>

Appendix E

Planting Design for High Traffic Pet Areas

Pet Areas

Landscape design for areas prone to heavy use by pets must utilize pet waste tolerant plantings. Additionally, the design should consider the location of pet waste tolerant areas.

- Street and Driveway Intersections: Locate 18-inch raised planters at intersections so that pets and pedestrians cannot access the planting beds. Install trench slot drains along the face so urine may be washed off the beds.
- Building Entrances/Exits: Install a 16-inch border along the tree lawn filled with crusher fines to provide a place for pets to relieve themselves. Install tree-guard fencing along the inside edge of the crusher fines so dogs cannot access the plantings.

Appendix F

Planting for Pedestrian & Hardscape Spaces

Pedestrian & Hardscape Spaces

Planting of trees near sidewalks and other hard surfaces must take into consideration the mature size of the tree and the tree's root system to ensure long-term success of the tree and minimize risk of damage to adjacent infrastructure.

Tree species that may be planted near sidewalks and hard surfaces:

Trees				
Botanical Name	Common Name	Mature Height	Mature Spread	Water Needs
<i>Syringa reticulata</i> 'Ivory Silk'	Ivory Silk Japanese Tree Lilac	20-25 Feet	15-20 Feet	Moderate
<i>Ginkgo biloba</i>	Ginkgo	50-80 Feet	30-40 Feet	Moderate
<i>Carpinus betulus</i> 'Frans Fontaine	Frans Fontaine Hornbeam	40 Feet	20 Feet	Moderate
<i>Tilia</i> - multiple species)	Linden	60 Feet	30 Feet	Moderate
<i>Pyrus calleryana</i> 'Redspire'	Redspire Pear	35 – 45 Feet	20 Feet	Moderate
<i>Pyrus calleryana</i> 'Capital'	Capital Pear	25 – 35 Feet	8 – 12 Feet	Moderate
<i>Prunus serrulata</i> – multiple varieties	Cherry	15 – 20 Feet	15-20 Feet	Low
Plum (<i>Prunus cerasifera</i> – multiple varieties)	Plum	20-30 Feet	20–30 Feet	Low

Tree species that should be avoided near sidewalks and hard surfaces:

- Bradford Pear (*Pyrus calleryana* 'Bradford')
- Norway Maple (*Acer platanoides*)
- Sugar Maple (*Acer saccharum*)
- Poplar (*Populus* – multiple species)
- Willow (*Salix* – multiple species)
- American Elm (*Ulmus americana*)

Appendix F

Planting for Pedestrian & Hardscape Spaces

Additional guidelines for tree spacing from sidewalks or hard surfaces are provided below. However, these are general guidelines only. The growth characteristics (root depth, root spread, canopy width, etc.) of any individual tree species may allow for planting of trees in spaces that differ from the general guidelines below. The City may consider alternative planting locations if proposed by licensed landscape architects.

- Mature tree height of 30 feet or under, plant at least 3-4 feet from sidewalks or hard surfaces
- Mature tree height between 30 feet and 50 feet, plant at least 5-6 feet from sidewalks or hard surfaces
- Mature tree height of 50 feet or over, plant at least 8 feet from sidewalks

Appendix G

Enabling Resolution