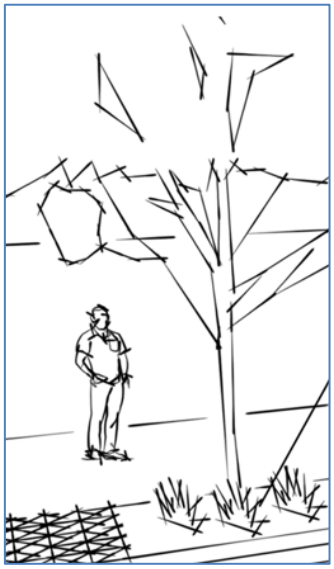
LANDSCAPE DESIGN GUIDELINES AND STANDARDS FOR AREAS IN AND ALONG PUBLIC RIGHTS-OF-WAY

CITY OF LONE TREE

ADOPTED BY CITY COUNCIL JUNE 18, 2017
REVISED SEPTEMBER 15, 2020



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I. BACKGROUND

The City of Lone Tree incorporated in 1995 as a result of residents in the area wanting a greater voice in shaping their future. An effort was made early on to create and enhance the City's physical and natural environment. Over the years, City Mayors and Councils and the Park Meadows Metro District invested significantly in beautifying the City streets with landscaped medians, brick walls, pedestrian lighting, benches, and public art. These improvements added to the aesthetic appearance of the City, and made traveling by car, bicycle, or foot, a more pleasurable experience. Progress was made elsewhere in the City to beautify the streetscape when new development was approved. In 2004, landscape design guidelines for rights-of-way were established by the City, and in 2016 a collaborative process was initiated by City staff to update the landscape guidelines and to provide a process for their implementation. These guidelines are the result of that process.

II. PURPOSE AND INTENT

The purpose of these guidelines is to provide landscape architects, metropolitan districts, and City staff with a clear understanding of the City's expectations for the planning, design, review, and maintenance of landscaping within and along public rights-of-way in the City of Lone Tree. These Guidelines set the stage for flexibility and 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 is to:

1. Enhance the unique natural identity and environment of Lone Tree and promote attractive streetscapes according to recognized horticultural and landscape design practices;
2. Design, install and maintain sustainable landscapes in keeping with Xeriscape principles for improved plant growth and survivability, which also serves to minimize plant replacement costs; and
3. Enhance public safety by separating vehicular traffic and pedestrian areas with tree lawns, through sight guidelines at intersections, and other means.

III. APPLICATION OF GUIDELINES AND STANDARDS

These Landscape Design Guidelines apply to landscaping in all new and expanding public rights-of-way in the City and any landscaping or entryway tracts owned by the City, a Metropolitan District, Homeowners Association, or private party or private entity that is adjacent to collector or arterial rights-of-way. These are not intended to apply to the reconstruction or maintenance of such landscaped areas existing prior to September 15, 2020.

IV. LANDSCAPE PLAN APPROVAL PROCESS

The intent of this process is to ensure thorough and efficient processing of landscape plans by the City for rights-of-way and designated development entryway and landscaping tracts adjacent to collector and arterial rights-of way, and to provide the applicant clear direction and a voice in the design process. In applying the design standards, all standards identified as "shall" or "shall not" are prescriptive. All other guidelines contained herein are intended to communicate an overall design intent and suggest possible ways to achieve that intent.

1. The applicant shall submit a .pdf of the landscape plans to the Community Development

Department for review as part of the Subdivision or Site Improvement Plan application. The Community Development Department will review the plans and refer them to the Public Works Department and other applicable review agencies as needed; the review processes shall adhere to those outlined in Municipal Code for the Subdivision and Site Improvement Plan applications, respectively. Landscape plans that are submitted as part of construction documents for rights-of-way projects that are not concurrent with the subdivision or development review processes will be submitted to the Public Works Department, which will review the plans and refer them to the Community Development Department, and other applicable review agencies as needed; plans submitted as part of construction documents for rights-of-way projects shall be reviewed within fifteen (15) business days of plan receipt. The applicant will discuss review comments and suggestions with Public Works and Community Development staff.

2. The applicant will make changes to the plans, as required, and resubmit plans to the applicable City department.

3. The City will review the revised plans and notify the applicant once approved.

4. Any changes to the approved landscape plans and/or landscaping installations must first be approved by the Community Development and Public Works Departments.

5. Community Development and Public Works staff will inspect landscaping once installation is complete to ensure that it matches 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.

V. LANDSCAPE PLAN SUBMITTAL REQUIREMENTS

A. Qualifications to Prepare Plan

The Landscape Plan shall be prepared and stamped by a landscape architect licensed with the state of Colorado.

B. Narrative

Submit a narrative that briefly explains what landscaping you are proposing in the right-of-way and how it meets the overall intent of these Guidelines.

C. Plan Requirements

1. General Requirements - The Landscape Plan, through graphic symbols and notes, should comply with the planting and site criteria specified by these guidelines, and with the policies, procedures, standards and all other requirements of the City.

2. Graphic Requirements - Include scale, north arrow, all utility locations including easements, pipe and conduit, sight triangles, utility structures, hydrants, traffic boxes, light locations, boundaries, setbacks, all horizontal improvements, grading/contours, walls with top and bottom of wall elevations, existing vegetation to remain with labels for size and species.

3. The landscape plan shall be prepared at a scale of 1" = 40' or 1" = 20' or another scale approved by staff, which allows for maximum clarity of the proposal.

4. Planting Details - Tree, shrub, perennial, annual, and ground cover planting details shall be shown on the plan.

5. A chart that includes the plant symbol or abbreviation, botanical and common names, size at planting, and for those plants proposed in the sight triangles, plant height at maturity.

6. Width of any tree lawn, raised planters, and tree wells.

7. Document the organic and inorganic soil amendments that may be added based on the results of a soil analysis.

8. Plant Selection - Plants should be selected from Appendix B of the Guidelines unless otherwise approved by the City. (See also Appendix C for a list of prohibited tree and plant materials.)

9. Hydrozones - Plants with similar water needs within each site microclimate (e.g., extent of shade; direction facing, such as west facing; location planted, such as toe of slope, etc.) should be zoned or grouped together for efficiency of water application, to prevent water waste and to provide optimum application of water to plants.

10. Numerical Requirements - The locations and quantities of plants should comply with the guidelines established herein.

11. Plant substitutions - Minor revisions to an approved landscape plan may be requested due to lack of plant availability or seasonal planting constraints. Substitutions may be permitted as approved by the City.

12. Mix of Species - Groupings of plants, rather than single species, are encouraged. Species selection should reflect canopy, understory, and ground cover plants that are compatible.

VI. XERISCAPE PRINCIPLES

The City encourages water conservation. It is important when developing landscape plans for Lone Tree streetscapes to take into account the regional climate. The City is located in high, semi-arid plains that receive 15 inches of rain or less a year on average (borderline desert). Additionally, this region is drought prone – some years getting less than a foot of rain. For that reason, the City of Lone Tree is committed to the reduction of water consumption in landscape irrigation and encourages the application of Xeriscape design and maintenance principles as set forth below.

A. Planning and Design - Develop a plan that takes into account both the regional climate and the microclimate of the site, existing vegetation and topography, the proposed use of the property, and grouping plants by their watering needs.

B. 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.

C. Appropriate Plant Selection - Select and group plants for their adaptability to the site, their design characteristics including year-round visual interest, and their water needs. With few exceptions, such as high-traffic turf areas as provided below, or the plantings of high-water use annuals at entries and other limited areas, choose native or low-water use plants.

D. Practical Turf Areas – Limit the use of high-water turf and avoid using turf on narrow areas and steep or exposed south-facing slopes where irrigation will be inefficient and mowing difficult.

E. Efficient Irrigation - Irrigate only when plants need it and irrigate deeply to encourage root growth for a healthier, more drought tolerant landscape. Grouping plants by water need will allow the most water-efficient design for an irrigation system. Management of the system will be as important as its design.

F. 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 or hard-to access areas, as the rock heats the soil and can retard plant growth.

G. Proper Maintenance - Preserve the beauty and water efficiency of the landscape through regular mowing, pruning, weeding, mulching, and irrigation system maintenance.

VII. LANDSCAPE DESIGN & MAINTENANCE

The intent of these guidelines is to provide general direction in streetscapes and in specific areas such as at intersections and near signs and lights, in compact urban areas where tree wells are desired, along streets with tree lawns, in medians and roundabouts.

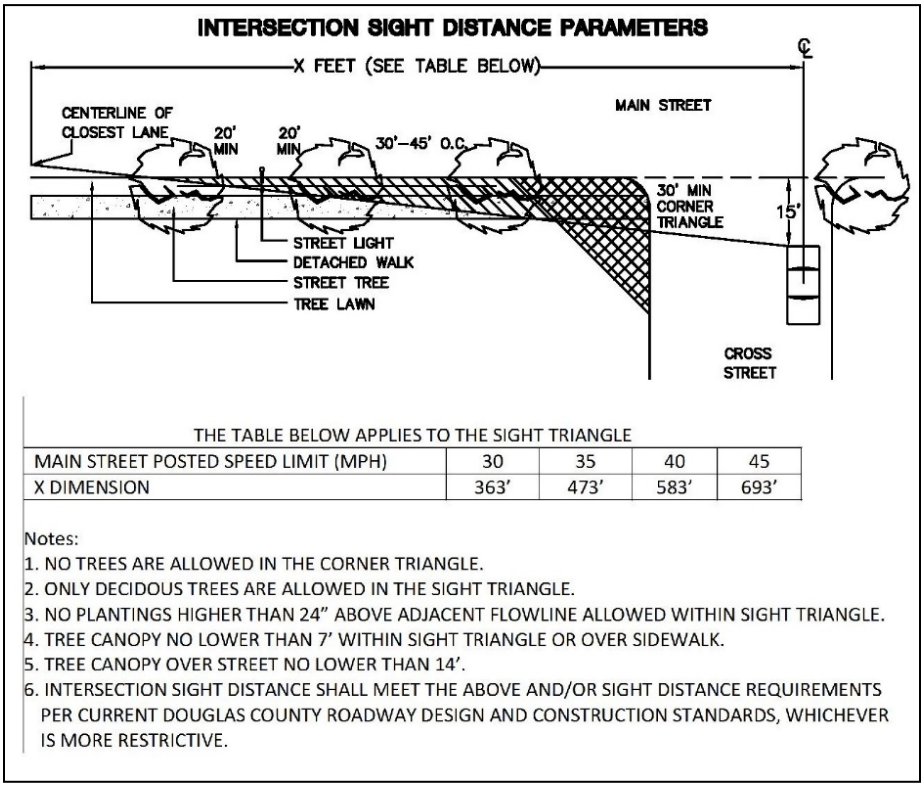
1. Street Design in Hardscapes and Tree Lawns: General Considerations

Many factors affect 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.

a. Select trees based on existing environmental conditions and to enhance adjacent property and structures.
b. Trees should have similar characteristics (in terms of form, character and spacing patterns) on both sides of the street.
c. At mature size, residential street trees should form a continuous canopy to reinforce the street space and frame vistas.
d. Provide a mix of species (if an insect or disease attacks one tree variety, other varieties in place can still provide a canopy).
e. Select trees with their mature size in mind so that trees have room to grow. Narrow areas suggest a narrow tree and open areas suggest a wide one.
f. Trees shall not be planted in utility easements unless permitted by the utility company.
g. Where trees may conflict with signs, lights, underground utilities, utility boxes, or fire hydrants, adjust plant species or location.
h. When replacing trees in an existing right-of-way, select new trees of similar characteristics to those being replaced, including form, scale, texture and color.
i. Trees shall not be planted closer than 30-feet from the intersecting curb face at intersections and street corners within the corner triangle. Trees shall be located no closer than 15-feet from the projected alley property line.
j. Trees shall be planted no closer than 20-feet from light poles. Individual site conditions may warrant an exception if approved by the City Engineer and utility provider.
k. Maintain existing trees and shrubs near intersections so as not to obstruct or interfere with views or sight lines. Private property owners with landscape in these areas should consult with the Community Development Department and City Engineer to verify and correct problems.

l. Tree canopies extending over a public roadway shall be maintained to have a minimum canopy of 14' above the roadway or be trimmed to not impede into the roadway area.

m. Minimum sight triangle and corner triangle distances (as designated by the City Engineer) shall be maintained for safe viewing of oncoming traffic and pedestrians. Within the sight triangle, no objects above (measured from the flowline) shall be permitted except for deciduous tree trunks and canopies as shown in Figure 1.



THE TABLE BELOW APPLIES TO THE SIGHT TRIANGLE

MAIN STREET POSTED SPEED LIMIT (MPH)	30	35	40	45
X DIMENSION	363'	473'	583'	693'

Notes:
1. NO TREES ARE ALLOWED IN THE CORNER TRIANGLE.
2. ONLY DECIDOUS TREES ARE ALLOWED IN THE SIGHT TRIANGLE.
3. NO PLANTINGS HIGHER THAN 24" ABOVE ADJACENT FLOWLINE ALLOWED WITHIN SIGHT TRIANGLE.
4. TREE CANOPY NO LOWER THAN 7' WITHIN SIGHT TRIANGLE OR OVER SIDEWALK.
5. TREE CANOPY OVER STREET NO LOWER THAN 14'.
6. INTERSECTION SIGHT DISTANCE SHALL MEET THE ABOVE AND/OR SIGHT DISTANCE REQUIREMENTS PER CURRENT DOUGLAS COUNTY ROADWAY DESIGN AND CONSTRUCTION STANDARDS, WHICHEVER IS MORE RESTRICTIVE.

Figure 1: Intersection Sight Distance Parameters

n. Design Space for Trees in Hardscapes

Selecting and planting trees in dense urban areas creates special challenges that require thoughtful design and installation.

1. Tree grates and vaults are discouraged as tree grates can girdle the tree if not adequately maintained, and typical tree vaults do not provide adequate space for tree root growth over the long term, often leading to the premature death of trees.
2. While tree lawns are the preferred option, where space is limited, the City may allow 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 (figure 2). Pavers should be of a character and quality that enhances the streetscape. Use structured soil (3/4-1½-inch angular granite rock interspersed within the soil) to minimize compaction and allow the roots to breathe, using soils with a mix of clay and organic matter according to the CU-Structural Soil standards. Given the tendency of expansive soils in Lone Tree, the use of tree wells with porous pavers must be in conformance with Geotechnical Soils recommendations.

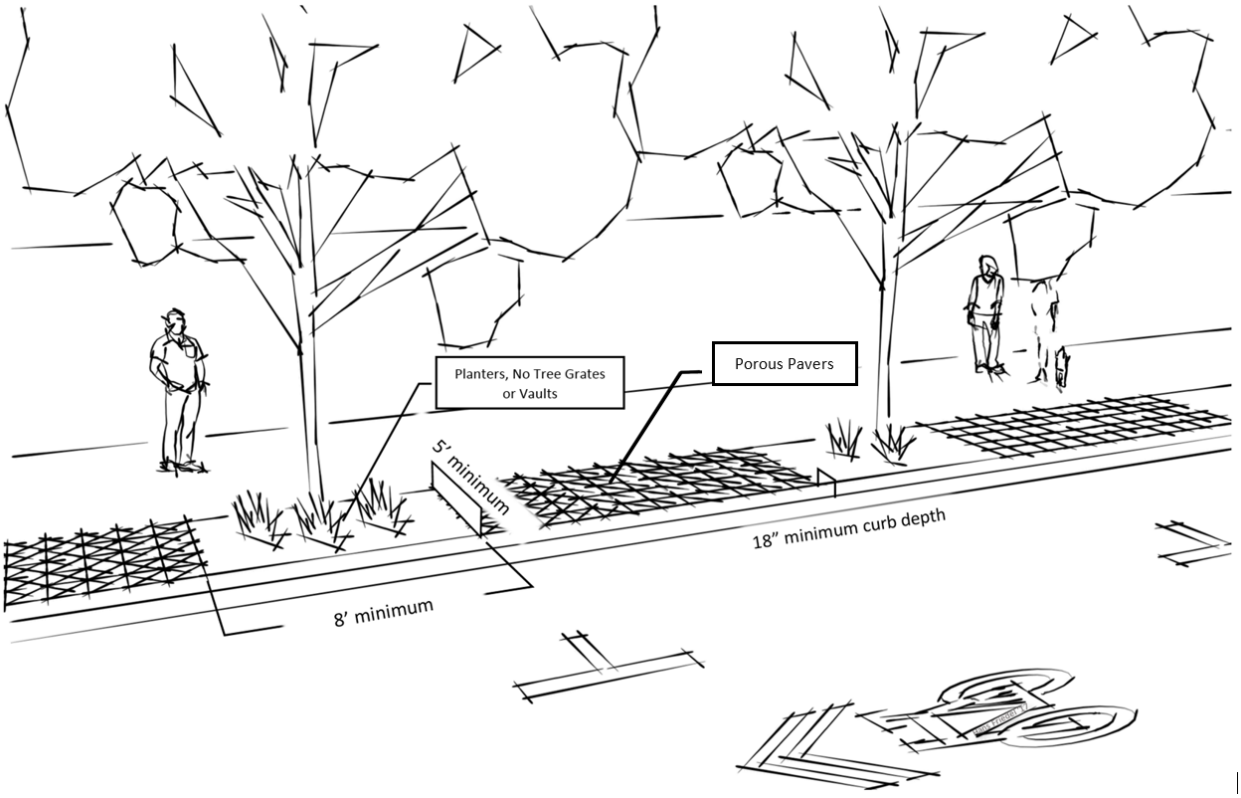


Figure 2: Landscaping for Trees in Hardscapes to help ensure better tree survivability and a beautiful streetscape.

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

Figure 3: Tree wells with fencing and porous

o. Design for Trees in Tree Lawns

1. Tree lawns shall be 8 feet wide (with trees planted no closer than 4 feet from back of curb) to provide adequate space for street trees to grow.
2. Canopy trees in the tree lawns are recommended (see list of recommended trees in Appendix B).
3. Create a continuous street edge with 1 deciduous canopy tree spaced regularly every 30-lineal 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 adjusted for curb cuts, lights, fire hydrants, signage, etc. Review special conditions with the City.

2. Landscape Design for Medians

a. With the emphasis on a continuous street tree canopy for Lone Tree, the medians are intended to complement that canopy. 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. 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.)

b. Median Landscaping shall not have planting objects above 24" within the sight triangle as defined by the City Engineer.

c. Median Tree Requirements – Medians that include trees shall have a minimum of one (1) tree (mixed ornamental, evergreen or deciduous tree) for every 1,200-square feet of median area. The actual number of tree plantings may be more, depending on the particulars of the median design.

d. Shrubs and Ground Covers – Shrubs and ground cover massings are encouraged. Generally, select drought tolerant plants that will require less water and will thrive better if placed in planting beds rather than turf areas. Water-loving plants should be minimally used and located in naturally moist areas and irrigated separately or provided with run-off water to minimize irrigation needs.

e. The use of shrubs and ground covers is to be restricted by the following provisions:

1. Trees, shrubs, and ground cover masses can be used in median plantings, but special care should be taken to preserve traffic safety and adequate visibility. All trees, shrubs and ground cover plantings should remain consistent within the design of each median. (See Appendix B for appropriate shrubs for medians).
2. Evergreen trees, shrubs, and ground covers shall not interfere with or obstruct any sight distance triangles.

3. Landscape Design for Roundabouts

a. The purpose of landscaping in the roundabout is to:

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

b. When designing landscaping for a roundabout it is important to:

1. Minimize driver distraction and minimize damage and enhance safety for automobiles that do encroach onto the roundabout
2. Consider maintenance requirements early in the program stages of development
3. Maintain adequate sight distances
4. Avoid obscuring the view of signs
5. Minimize fixed objects such as trees, poles, or guard rails

c. To minimize driver distraction, avoid items in the central island that may be considered an attractive nuisance and may encourage passersby to go to the central island for pictures, or other objects that might distract drivers from the driving task. Decorative

features that may attract pedestrians within the central island or lead to distracted driving include (not all inclusive):

1. Decorative statutes
2. Water fountains/features
3. Artwork
4. Decorative walls
5. City logos or community welcome signs
6. Commemorative plaques or monuments
7. Banners and flags
8. Street furniture (decorative and non-decorative)
9. Combination of these above features

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

1. Hazardous material - such as concrete, stone, boulders or wood walls
2. Fixed objects - including trees having a mature diameter greater than 4-inches
3. The City's standard approach to central-island landscaping is mounding the earth and providing plantings. Design the slope of the central island with a minimum grade of 4% and a maximum of 6:1 sloping upward toward the center of the circle. The earth surface in the central island area forms an earth mound that is a minimum of 3.5-feet to a maximum of 5-feet in height, measured from the circulating roadway surface at the curb flange. As an absolute minimum, keep the outside 6 feet of the central island free from landscape features to provide a level of roadside safety, snow storage, and unobstructed sight distance.
4. Low-to-the-ground landscape plantings in the splitter islands (see figure 4) and approaches can both benefit public safety and enhance the visual quality of the intersection and the community. In general, unless the splitter islands are very long or wide, they should not contain trees, planters, or light poles. The City would consider alternate treatments as long as the landscape design elements are approved by a qualified roundabout engineer.

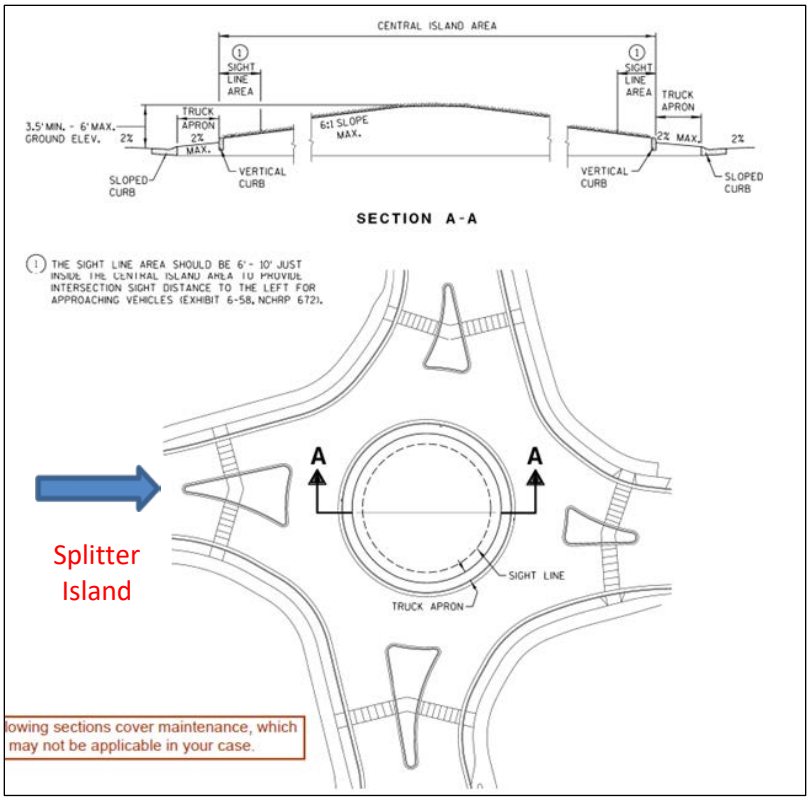


Figure 4: Roundabout sight line areas

4. Landscape Design to Enhance Water Quality

Rain gardens are planted depressions that allows rainwater runoff from impervious urban areas, like roofs, driveways, walkways, and parking lots, the opportunity to be absorbed. The City recognizes and supports the use of rain gardens along public rights-of-way where appropriate, to enhance water quality, to save on irrigation water, and to create beautiful landscapes. Supplemental irrigation to such landscapes may be required to provide adequate water during dry summer months.

Figure 5: Example of a rain garden along rights-of-way

VIII. SURFACE TREATMENTS

Surface or ground-plane treatments consist of irrigated turf and in purposefully natural areas, non-irrigated turf, organic mulches and low height plant materials including ground covers, annuals, and perennials. These treatments are necessary to retain soil porosity, stabilize slopes, reduce erosion, slow evaporation from soils, and aesthetically improve the landscape.
Turfgrass should be specified according to the same criteria as other plants. These guidelines emphasize responsible turf uses and well managed, water efficient irrigation systems to support them.

A. Recommended Turfgrass

1. Use low-water demand grass (requiring less than 1 ½-inches of water per week) in tree lawns, medians, and along rights-of-way.
2. Kentucky bluegrass and turf-type fescues are allowed only in limited areas such as high-pedestrian traffic areas as approved by the City on a case by case basis and are not permitted on slopes with steeper than 3:1 gradient, or in any design configuration that cannot be irrigated efficiently.

B. Topsoil and Soil Amendment Requirements

Organic matter in the soil increases water holding capacity, helps reduce soil compaction and promotes root development in poor soils. Soil preparation can allow moisture to be held in marginal soils up to three times longer, thus resulting in reduced irrigation demand.

1. All soils in which turf or sod is to be installed shall be amended with organic matter such as compost and aged manure. Incorporate a minimum of 4-cubic yards of compost per each 1,000-square feet to a depth of at least 4 to 6-inches by rototilling or other suitable means.

C. Ground Covers

Ground covers are beneficial in solving problematic conditions such as steep slopes or small irregularly shaped areas. They are useful in visually linking larger plant material groupings, providing leaf texture and seasonal color.

Care should be given in selection of ground cover species. They should be appropriate for the intended character of the landscape. Mature height, color, texture, growth habit, disease resistance, hardiness, drought resistance, and maintenance aspects all play a role in the ultimate selections. See Appendix B for specific recommendations.

1. Low-growing shrubs and evergreens – These are often ideal selections for coverage, especially on slopes.
2. Perennials – They are especially effective because the local growing season is relatively short and late spring frosts and snow can impact on the bloom of trees and shrubs.
3. Annuals -- These flower plantings enrich median and right-of-way landscapes and the overall richness of the City's streetscape.

D. Mulch

1. Organic mulches shall be applied to a depth of 3-inches in all non-turf planted areas. Use fibrous shredded bark mulch as it holds together better in windy conditions. Exceptions may be made by the City for erosion control in drainage ways. A minimum of 75% of all mulched areas shall be designed to have non-tree vegetative cover of shrubs or ground covers.
2. Use of non-organic mulches (gravel, rock, cobbles and stones) are discouraged around plants, because it raises the overall soil temperature and is generally detrimental to plant growth. For that reason, non-organic mulches are limited to areas around plants in steep slope and hard to access areas for maintenance purposes and are evaluated on a case-by-case basis by the City.
3. Mulch should be selected carefully in areas that may be susceptible to washout such as near road inlets, landscape drains and/or area drains. These areas will require review and approval of the City Engineer to ensure the mulch selected is appropriate for the location.

IX. PLANT MATERIAL SIZE & SHAPE REQUIREMENTS

A. Plant Material Sizes

Minimum planting/installation sizes of plant material should conform to the standards below:

1. Canopy trees – 2 to 3-inch caliper.
2. Deciduous ornamental trees – 2-inch caliper or for median trees, multi-stemmed clump form with a minimum height of 6 to 8-feet.
3. Evergreen trees – 6 to 10-feet in height.
4. Evergreen and deciduous shrubs and vines – 5-gallon size.
5. Ornamental grasses – 1-gallon or 5-gallon size depending on species and availability
6. Ground covers and perennials – no minimum size; spacing should provide 80% coverage within 2 to 3-years.

Stella D'Oro Daylily does well in streetscapes

B. Plant Material Shape/Habit

1. The branching height of mature trees on the traffic side of the street shall be no less than 14-feet above the street. Trees shall be regularly pruned to achieve this affect.
2. The branching height of mature trees on the pedestrian side of the street shall be no less

than 7-feet above the sidewalk. Upon planting, trees shall be pruned to eliminate any hazards to pedestrians.

3. Small varieties of thornless and fruitless trees may be used only in the median areas, traffic islands, or beds where lower branching habit will not interfere with pedestrians, vehicles, or driver visibility.

X. IRRIGATION SYSTEM

Streetscapes should be irrigated with a properly designed irrigation system to cover all plant material in the right-of-way.

A. Irrigation Design

1. Irrigation systems should be designed to permit turf grass to be irrigated separately from all other planting areas. Turf irrigation zones should be further separated by slope, exposure, and turf-type water needs. Automatic irrigation controllers should have repeat cycle capability to permit moisture to penetrate into the soil rather than run-off.
2. Irrigation schedules should be set when pedestrians are not likely to be present.
3. Use rainfall and freeze sensors, weather-based controllers, check valves, pressure reducers and flow sensor valves to reduce water waste.
4. Sprinkler heads in the same zone should have the same precipitation rates. Pop-up heads in turf should have at least a 4-inch riser height.
5. Controllers should have the capability to irrigate shrubs, flowers and trees separately from turf, and have time capability to permit effective use of low volume systems over longer cycles.
6. Perennial and ground cover areas may be irrigated with fixed riser or shrub pop-ups.
7. Pop-up risers should be fitted with low pressure and low volume spray heads. Shrubs and trees may be irrigated by drip or low volume spray heads.
8. Normal spray patterns should be confined to mass vegetated areas or root zones of plants.
9. Spraying of streets, walks, driveways, buildings and fences should be avoided. If spraying of walks and bike ways cannot be avoided, the controller should be timed to spray at night to reduce conflicts with users.
10. Sprinkler system installations shall include a rain sensor that will override the irrigation cycle of the sprinkler system when rainfall has occurred in an amount sufficient to negate the need for irrigation at the scheduled time.

B. General Requirements for the Irrigation Plan

1. The irrigation plan shall be submitted and approved prior to final landscape development plan approval.
2. The irrigation plan shall graphically and through notes depict a water-efficient design consistent with the landscape and grading plans.
3. The irrigation plan shall be prepared at a scale of 1" = 40' or 1" = 20' or another scale approved by staff, which allows for maximum clarity of the proposal.
4. The irrigation plan shall show and note hydrozones. The delineation of hydrozones should take into account like water demand plants, slopes, environmental factors and water pressure.
5. Irrigation systems should conform to the irrigation standards and all other provisions of these guidelines.
6. The irrigation zones on the irrigation plan should substantially correspond to the hydrozones on the landscape plan and be labeled by precipitation rates and method of water application (drip, spray, etc.).

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.

Deciduous: A plant with foliage that is shed annually.

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.

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.

Hydrozoning: The design practice of grouping plants by similar water requirements to maximize potential efficiency of irrigation.

Irrigation plan: A two-dimensional plan drawn to scale that shows the layout of irrigation components, component specifications, and hydrozones. Layout of pipes may 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 buffer: Land area with landscape plantings and other components used to visibly separate one use from another or to shield or block noise, lights, or other nuisances.

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

Colorado Licensed 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 the street separating the directions of traffic.

Microclimate: The climate of a specific place within a given area.

Mulch: Nonliving organic 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.

Ornamental tree: A tree planted primarily for its decorative and/or flowering value, or for screening and that typically does not exceed a height of 30-feet in the Denver area.

Practical turf areas: A landscape design and management concept promoting turf only in areas of the landscape that are functional and can be efficiently watered by a supplemental irrigation system.

Rain sensor or rain shutoff device: A device connected to an irrigation controller that overrides scheduled irrigation when significant precipitation has been detected.

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 major 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 that 12-feet in height at its maturity. It may be evergreen or deciduous.

Site plan: A two-dimensional representation, drawn to scale, of the total area of 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.

Street right-of-way: The area of land designated for streets, sidewalks, utilities and public use.

Street tree: A tree planted in the street right-of-way (streetscape) between the curb or edge of road and the adjoining property line, or in the median, to provide shade, spatial definition, and human scale, and to enhance the street environment.

Streetscape: That portion of the street right-of-way typically located between the curb and private property line for which the adjacent property owner has the legal responsibility to maintain for the public good. The landscape treatment includes vegetation, sidewalks, streetlights, fencing, signs, utilities, etc.

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 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, form a dense growth of leaf blades and roots.

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

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

Xeriscape principles: Methods of professional landscaping that include: planning and design, soil analysis, efficient irrigation, appropriate plant selection, practical turf areas, use of mulches, and proper maintenance (See Section VI).

APPENDIX B

LIST OF APPROVED PLANTS

All plants and trees should fit the soil, sun, moisture, and maintenance environment in which they are planted. All plants and trees should be able to endure pollution, compacted soils, and require minimal water and low maintenance. The S.T. designation in the chart below identifies trees and plants that are salt tolerant and may better withstand harsh roadside conditions, though there is no evidence that they can withstand concentrations of magnesium chloride applied to streets as a de-icer.

For rights-of-way along commercial properties, select trees that will minimize the obstruction of views of signs. Select trees with appropriate forms and character that enhance the nearby structures and property. The City Forester may consider other species that are recommended for rights-of-way by authoritative sources, such as the Colorado State University Extension, the Colorado Tree Coalition, the Colorado Nursery & Greenhouse Associate, and the Colorado Chapter of the American Society of Landscape Architects. Select trees and plants with a 5b plant hardiness zone as defined by the United States Department of Agriculture.

List of Trees and Other Plant Materials for Tree Lawns and Medians Where Appropriate

S.T. are Salt Tolerant Species

BOTANIC NAME	*COMMON NAME*	*MEDIAN*	*S.T.*	*TREE LAW*
DECIDUOUS TREES				
Acer ginnala	Amur Maple	X	X	
Acer miyabei	Miyabe Maple	X	X	X
Acer nugundo	Boxelder 'Sensation'	X		
Acer pseudoplantanus	Sycamore Maple	X	X	X
Acer rubrum	Red Maple	X		X
Amelanchier x grandiflora	Autumn Brilliance Serviceberry	X	X	
Amelanchier canadensis	Shadblow Serviceberry	X	X	
Catalpa speciosa	Western Catalpa	X	X	X
Celtis laevigata	Sugar Hackberry	X	X	X
Celtis occidentalis	Common Hackberry	X		X
Crataegus crus-galli var. inermis	Thornless Cockspur Hawthorn	X		
Ginkgo biloba	Ginkgo	X		X
Gleditsia triacanthos 'Imperial'	Imperial Honeylocust	X	X	X
Gleditsia triacanthos 'Shademaster'	Shademaster Honeylocust	X	X	X
Gleditsia triacanthos 'Skyline'	Skyline Honeylocust	X	X	X
Gleditsia triancanthos 'Trueshade'	Trueshade Honeylocust	X	X	X
Gymnocladus dioica	Kentucky Coffeetree	X	X	X
Koelreuteria paniculata	Golden Raintree	X		
Malus spp. (including all Crabapples)	Crabapples (all types)	X		
	'Bechtel'	X		
	'Centurion'	X		
	'Spring Snow'	X		
Platanus occidentalis	American Sycamore	X		X
Pyrus calleryana 'Aristocrat'	Aristocrat Pear	X		
Pyrus calleryana 'Chanticleer'	Chanticleer Pear	X		

Quercus alba[1]	White Oak	X	X	X
Quercus bicolor[1]	Swamp White Oak	X		X
BOTANIC NAME	***COMMON NAME***	***MEDIAN***	***S.T.***	***TREE LAWN***
Quercus macrocarpa	Bur Oak	X		X
Quercus robur	English Oak	X		X
Quercus robur 'Fastigiata'	Columnar English Oak	X		X
Quercus Rubra	Northern Red Oak	X	X	X
Sophora japonica	Japanese Pagoda Tree	X		
Syringa reticulata	Japanese Tree Lilac	X		
Ulmus Americana 'Valley Forge'	American Elm	X	X	X

EVERGREEN TREES				
Juniperus chinensis Hetzi Columnaris	Hetzi Columnaris'	X	X	
Juniperus chinensis 'Keteleeri'	Keteleeri'	X	X	
Juniperus horizontalis	Creeping juniper	X	X	
Juniperus x media 'Pfitzeriana Compacta'	Compact Pfitzer	X	X	
Juniperus scopulorum 'Blue Heaven'	Blue Heaven'	X	X	
Juniperus scopulorum 'Cologreen'	Cologreen'	X	X	
Juniperus scopulorum 'Grey Gleam'	Grey Gleam'	X	X	
Juniperus scopulorum 'Moonglow'	Moonglow'	X	X	
Juniperus scopulorum 'Skyrocket'	Skyrocket'	X	X	
Juniperus scopulorum 'Welchii'	Welchii'	X	X	
Juniperus scopulorum 'Wichita Blue'	Wichita Blue'	X	X	
Juniperus virginiana 'Canaertii'	Canaertii'	X	X	
Juniperus virginiana 'Hillspire'	Hillspire'	X	X	
Juniperus virginiana 'Manhattan Blue'	Manhattan Blue'	X	X	
Picea glauca 'Conica'	Dwarf Alberta Spruce	X		
Picea pungens	Colorado Spruce	X	X	
Pinus aristata	Bristlecone Pine	X		
Pinus edulis	Pinyon Pine	X		
Pinus flexilis	Limber Pine	X		
Pinus mugo- dwarf varieties only	Mugo Pine- dwarf varieties only	X		
Pinus nigra	Austrian Pine	X	X	
Pinus strobiformis	Southwestern White Pine	X		
Pinus ponderosa	Ponderosa Pine	X		
Pinus sylvestris	Scotch Pine	X		

DECIDUOUS SHRUBS				
Berberis thunbergii 'Crimson Pygmy'	Crimson Pygmy Barberry	X		
Berberis thunbergii 'Rose Glow'	Rose Glow Barberry	X		
Caragana pygmaea	Pygmy Peashrub	X		
Caryopteris clandonensis	Blue Mist Spirea	X	X	
Ceratoides lanata	Winterfat	X		X
Cercocarpus intricatus	Littleleaf Mountain-Mahogany	X		
Cytisus 'Moonlight'	Moonlight Broom	X	X	
Cytisus purgans	'Spanish Gold' Andorra Broom	X	X	

[1] Quercus alba and quercus bicolor are very salt tolerant, yet they are susceptible to problems in alkaline soils. They are also large trees that may be inappropriate to plan in close proximity to buildings.

Fallugia paradoxa	Apache Plume	X		
Holodiscus dumosus	Rock Spirea	X	X	
Ligustrum obtusifolium var. regelianum	Regal Privet	X		
Ligustrum vulgare 'Lodense'	Lodense Privet	X		
Lonicera 'Honeyrose'	Honeyrose Honeysuckle	X	X	
BOTANIC NAME	***COMMON NAME***	***MEDIAN***	***S.T.***	***TREE LAWN***
Lonicera involucrata	Twinberry Honeysuckle	X	X	
Lonicera korolkowii var. floribunda 'Blue Velvet'	Blue Velvet Honeysuckle	X	X	
Lonicera syringantha var. wolfii	Lilac-Flowering Dwarf Honeysuckle	X	X	
Lonicera tatarica 'Arnold Red'	Arnold Red Honeysuckle	X	X	
Lonicera xylosteoides 'Clavey's Dwarf'	Clavey's Dwarf Honeysuckle	X	X	
Lonicera xylosteoides 'Emerald Mound'	Emerald Mound Honeysuckle	X	X	
Perovskia atriplicifolia	Russian Sage	X		
Philadelphus microphyllus	Littleleaf Mockorange	X	X	
Potentilla fruticosa cultivars	Potentilla	X	X	
Prunus besseyi 'Pawnee Buttes'	Pawnee Buttes Western Sandcherry	X		
Prunus virginiana	Native Chokecherry	X		
Prunus virginiana 'Schubert'	Canada Red Chokecherry	X		
Rhus aromatica	Fragrant Sumac	X	X	
Rhus aromatica 'Gro-Low'	Gro-Low Sumac	X	X	
Rhus glabra var. cismontana	Rocky Mountain Sumac	X	X	
Rhus trilobata	Threeleaf Sumac	X	X	
Rhus typhina 'Laciniata'	Cutleaf Sumac	X	X	
Ribes alpinum	Alpine Currant	X	X	X
Ribes hirtellum 'Pixwell'	Pixwell Gooseberry	X		
Spirea Japonica and cultivars	Japanese Spirea	X	X	
Spirea Nipponica "Snowmound"	Snowmound Spirea	X	X	
Spirea trilobata and cultivars	Threelobe Spirea	X	X	
Spirea x bumalda and cultivars	Bumald Spirea		X	
Spirea x vanhouttei	Vanhoutte Spirea		X	
Symphoricarpos chenaultii 'Hancock'	Hancock Coralberry	X		
Symphoricarpos orbiculatus	Red Coralberry	X		
Symphoricarpos oreophilus	Mountain Snowberry	X		
Syringa patula 'Miss Kim'	Miss Kim Lilac	X		

BROADLEAF EVERGREEN SHRUBS				
Buxus koreana	Korean Boxwood	X		
Cotoneaster apiculata	Cranberry Cotoneaster	X		
Cotoneaster horizontalis	Rock Spray Cotoneaster	X		
Cotoneaster microphylla cochleata	Small-leaved Cotoneaster	X		
Euonymus kiautschovica (patens)	Manhattan Euonymus	X		
Euonymus fortunei 'Sarcoxie'	Sarcoxie Euonymus	X		
M. aquifolium 'Compacta'	Compact Oregon Grape	X		

FLOWERS AND GROUNDCOVERS				
Achillea tomentosa and cvs	Woolly Yarrow	X		X

Aegopodium podagraria and cvs.	Snow-on-the-Mountain	X		X
Ajuga reptans and cvs.	Carpet Bugle	X		X
Antennaria spp.	Pussytoes	X		X
Arctostaphylos uva-ursi	Kinnikinnick	X		X
Artemisia schmidtiana	Silver Mound Artemisia	X	X	X
BOTANIC NAME	***COMMON NAME***	***MEDIAN***	***S.T.***	***TREE LAWN***
Callirhoe involucrata	Mallow Poppy	X		X
Convallaria majalis	Lily-of-the-Valley	X		X
Cotoneaster dammeri 'Coral Beauty"	Coral Beauty Cotoneaster	X		X
Delosperma cooperi	Purple Ice Plant	X		X
Delosperma nubigenum	Hardy Yellow Ice Plant	X		X
Duchesnea indica	Mock Strawberry	X		X
Euonymus fortunei sp.	Wintercreeper	X		X
Fragaria vesca (syn. F. americana)	Wild Strawberry	X		X
Galium ordoratum	Sweet Woodruff	X		X
Gypsophila repens and cvs.	Creeping Baby's Breath	X		X
Hemerocallis	Stella D'Oro Daylily	X	X	X
Hedera Helix	English Ivy	X		X
Heuchera sp.	Coral Bells	X	X	X
Lysimachia nummularia	Moneywort	X		X
Mahonia Repens	Oregon Grape	X		X
Penstemon pinifolius	Pine-leaf Penstemon	X		X
Persicaria affinis and cvs. (syn Polygonum affine)	Himalayan Fleeceflower	X		X
Phlox subulata	Creeping Phlox	X		X
Potentilla tabernaemontani 'Nana'	Creeping Potentilla	X		X
Rosa Radrazz	Knockout Rose	X		
Sedum spurium and cvs.	Sedum	X	X	X
Sedum kantschaticum and cvs.	Sedum	X	X	X
Sedum acre and cvs	Sedum	X	X	X
Sempervivum arachnoideum and cvs.	Hen & Chicks, Cobweb Houseleek	X		X
Stachys byzantina and cvs.	Lambs' ear	X		X
Teucrium chamaedrys	Wall Germander	X		X
Thymus serpylum	Creeping Thyme	X		X
Veronica repens and cvs.	Creeping, Speedwell Veronica	X		X
Vinca minor	Periwinkle	X		X
Waldsteinia ternata, W. fragaroides	Barren Strawberry	X		X
Zinnia grandiflora	Paper flower, Wild Zinnia	X		X

GRASSES				
Agropyron cristatum	Crested Wheat Grass	X		
Calamagrostis acutiflora	Forester's Feather Reed Grass	X	X	X
Elymus arenarius	Blue Lyme Grass	X		X
Imperata cylindrica	Japanese Blood Grass	X		X
Phalaris arundinacea	Ribbon Grass	X		X

APPENDIX C

PROHIBITED TREE AND PLANT SPECIES

The following species of trees are prohibited in the right-of-way and shall not be permitted:

- 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
- Russian Olive (Eleagnus angustofolia)
- Tree of Heaven (ailanthus altissima)
- Any weeping or pendulous type tree
- Any tree with bushy growth habit which cannot be maintained to a single leader or trunk (with the exception that such trees may be planted in the medians where they do not cause impede sight distance)
- Any tree which would obstruct, restrict, or conflict with the safe use of the right-of-way.
- Artificial trees, shrubs, turf, or plants (City approved art pieces are exempt)

Note: Mexican Feather Grass (Nassella Tenuissima) and all plant materials/trees listed within the Noxious Weed List, Categories A, B, or C, as published by the Colorado Department of Agriculture, are also prohibited and shall not be permitted.

APPENDIX D

PLANTING

Tree Planting

ISA tree planting specifications should be followed based on the site-specific condition, soil condition, and other factors.

APPENDIX E

MAINTENANCE

Tree Establishment and Maintenance

Help ensure tree survivability in this semi-arid environment by providing winter watering the first 3 years and through an evaluation by an arborist in year 3 on structural pruning and pest management. ANSI A300 Standards, developed by the Tree Care Industry Association for maintenance are recommended.

CITY OF LONE TREE
RESOLUTION NO. 20-21

A RESOLUTION ADOPTING THE CITY OF LONE TREE LANDSCAPE DESIGN GUIDELINES AND STANDARDS FOR AREAS IN AND ALONG PUBLIC RIGHTS-OF-WAY

WHEREAS, the City Council for the City of Lone Tree (the "City") is authorized to adopt land use regulations governing development within the City pursuant to its Home Rule Charter and Article 23, Title 31 of the Colorado Revised Statutes; and

WHEREAS, the City previously adopted Landscape Design Guidelines for Public Rights-of-Way via Resolution No. 17-14 ("Landscape Design Guidelines"); and

WHEREAS, the stated goal of the Landscape Design Guidelines is to communicate the aspects of good landscape design for streetscapes, and to provide a process for review and approval of landscaping in public rights-of-way; and

WHEREAS, the City now desires to update the Landscape Design Guidelines to clarify the landscape plan review process and its applicability to new development entryways; and

WHEREAS, the City Council desires to adopt the updated Landscape Design Guidelines as restated in the Landscape Design Guidelines and Standards for Areas in and along Public Rights-of-way ("Updated Landscape Design Guidelines"), attached as **Exhibit A**.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF LONE TREE, COLORADO, THAT:

Section 1. The City Council hereby: (a) approves and adopts **The Landscape Design Guidelines and Standards for Areas in and along Public Rights-of-way**, attached as **Exhibit A**; (b) repeals the Landscape Design Guidelines previously adopted pursuant to Resolution No. 17-14; and (c) authorizes the Community Development Director to make minor, non-substantive modifications to the Updated Landscape Design Guidelines to correct clerical errors or information.

Section 2. The Landscape Design Guidelines and Standards for Areas in and along Public Rights-of-way adopted herein shall become effective upon the effective date of Ordinance No. 20-06.

APPROVED AND ADOPTED THIS 15TH DAY OF SEPTEMBER, 2020.

CITY OF LONE TREE

By: _____
Jacqueline A. Millet, Mayor

ATTEST:

_____
Jay Robb, City Clerk

(SEAL)

EXHIBIT A

CITY OF LONE TREE LANDSCAPE DESIGN GUIDELINES AND STANDARDS FOR AREAS IN AND ALONG PUBLIC RIGHTS-OF-WAY

The attachment documents have yet to be executed/recorded.
When they are finalized this document will be updated.