
Article 8. Landscape & Site Design

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8.01 Intent

The intent of this article is to:

- A. Improve the image of the city and build value with a well-designed streetscapes, civic spaces, and open spaces.
- B. Emphasize distinct areas throughout the city with the location and design of landscape.
- C. Coordinate landscape and design amenities across multiple sites and leverage the impact of consistent relationships of lots to public frontages.
- D. Strengthen the character, quality, and value of development with landscape design that serves multiple aesthetic, environmental, and social functions.
- E. Enhance the ecological function of un-built portions of sites and protect and integrate established natural amenities into development projects.
- F. Screen and mitigate the visual, noise, or other impacts of sites and buildings.
- G. Promote landscape design that is regionally appropriate and maintains or recreates ecological balance.

8.02 Applicability

- A. **General Applicability.** The standards in this article shall apply to the following:
 - 1. A building permit for a new principal structure;
 - 2. A building permit for an existing principal structures that results in an increase of the gross floor area by more than 15% and more than 500 square feet;
 - 3. A site plan that increases the impervious area by more than 20%;
 - 4. Any addition of parking to nonresidential uses or residential uses with 10 or more dwelling units
 - 5. Any change of use to a site or building that increases the activity or intensity of use on a site in a manner that could negatively impact adjacent property.
- B. **Applicability to Existing Buildings and Sites.** In cases where the landscape and site design standards apply to existing sites or buildings, the intent is to bring the site into full compliance with these standards. For infill and rehabilitation of existing sites, the PD Director may prorate the requirements to the extent of the site work, and reduce requirements where clear and documented physical constraints or existing infrastructure that full compliance impractical. Standards shall be applied according to the following order of priority areas.
 - 1. Streetscapes and frontage areas along public rights-of-way;
 - 2. Perimeter landscape and buffers;

3. Interior parking and site landscape.
4. Other lot open spaces

The site shall be brought closer to compliance by meeting at least 50% of the required planting standard in the applicable portions of the site, and in no case shall the reduction be below the minimum necessary to address the documented constraint.

8.03 Required Landscape

- A. **Design Objectives.** Landscape plans shall meet the following design objectives:
1. Frame important streets and emphasize gateways with street trees, landscape massing, and other vertical elements.
 2. Provide comfort, spatial definition and visual interest to active outdoor spaces including walkways, civic spaces, parks, trails or other similar outdoor gathering places
 3. Promote efficient site design where landscape and open space to serve multiple functions including aesthetic, screening, environmental, and recreational objectives.
 4. Locate plants and landscape features to improve resource and energy efficiency with arrangements that consider wind blocks, heat gain, water usage, solar access, and other elements inherent to the site.
 5. Prioritize storm water management and prevent erosion through natural landscape elements that intercept, infiltrate, store, or convey precipitation and runoff.
 6. Encourage the protection and preservation of healthy plants and landscape features that can meet current and future needs of the site through development, rather than plant and design new ones.
- B. **Planting Requirements.** The required landscape shall be based on different elements of the site according to Table 8-1, Plant Requirements.

Table 8-1: Plant Requirements			
Site Element	Trees	Evergreen Trees	Shrubs
Streetscape: <i>The landscape area in the ROW or along the lot line immediately abutting the right of way.</i>	1 large tree per 40' of lot frontage;	n/a	n/a
	Corner lots shall meet this requirement on street side lot lines at a rate of 50% of the requirement. Constrained right-of-way or streetscapes may substitute 1 ornamental tree per 20.'		
Frontage & Foundation. <i>The area between the building line and ROW along a street, including street sides of corner lots.</i>	1 ornamental tree per 40' of lot frontage for buildings set back more than 10' from the front lot line;	Evergreen trees may be substituted for ornamental trees at a rate of 1 for 1, and for large trees at a rate of 2 for 1, for up to 50% of the requirement.	1 shrub per 5' of building frontage for buildings setback more than 10' from the front lot line.
	AND 1 large tree per 40' of lot frontage for buildings set back 30' or more from the front lot line.		3 ornamental grasses may be substituted for 1 shrub up to 50% of the requirement.
	Corner lots shall meet this requirement on street side lot lines at a rate of 50% of the requirement		
Parking. <i>Landscape areas on the perimeter or interior of parking.</i>	1 large tree per 10 parking spaces	Evergreen trees may be substituted for large trees at a rate of 2 for 1, for up to 50% of the requirement	1 shrub per 10' of perimeter. [1]
	Ornamental trees may be substituted for large trees at a rate of 2 for 1 up to 50% of the requirement		Type I buffer for any parking area within 30' of a street or internal access street. (See Section 8.04.)

Table 8-1: Plant Requirements

Site Element	Trees	Evergreen Trees	Shrubs
			3 ornamental grasses may be substituted for 1 shrub up to 50% of the requirement.
Buffers. Areas of a site that require additional landscape to mitigate potential impacts on streetscape or adjacent property.	See Section 8.03		
Civic and Open Spaces. Areas of the site designed as part of a broader system of formal and natural open spaces.	See Section 3.02		
Other.	All other unbuilt or unpaved areas of a site shall require ground cover, perennials, grasses, rock, mulch or other natural and permeable surfaces. Up to 20% of any single landscape area may consist of inorganic (non-living) decorative material such as river rock, colored pea gravel, boulders, pavers, or similar natural material, provided it is designed and arranged in a way that can infiltrate runoff in association with planting areas and compliments the landscape design.		

[1] Parking lot perimeter shall be the linear edge of any parking area or driveway within 100' of a property line or internal access street where there is not building in between the parking and the boundary.

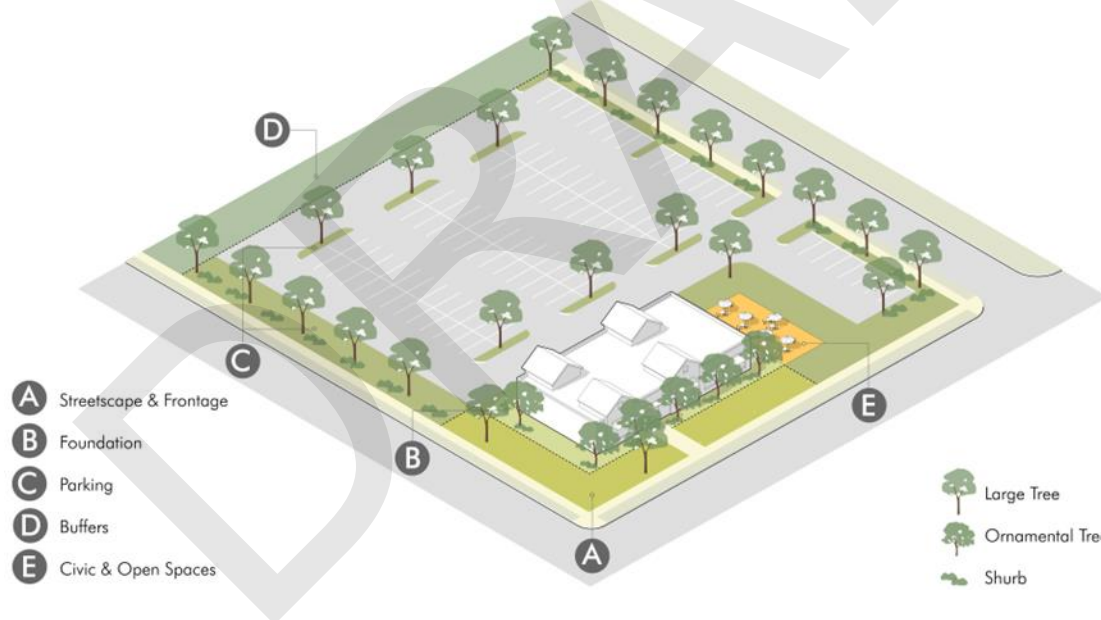


Figure 8-1 Landscape Design

The landscape requirements are allocated to different elements of the site and emphasize how different landscape standards and designs should be used to serve different functions on the site, including relating the streetscape, adding comfort and interest to active spaces, and or mitigating impacts on adjacent areas.

- C. **Credits for Existing Vegetation.** Preservation of existing landscape material that is healthy and desirable species, or which equally or better meets the intent or design objective for landscape on a specific portion of the site, may count for landscape requirements provided measures are taken to ensure the survival through construction and all other location and design standards are met.

1. Landscape plans by a licensed landscape architect or certified arborist shall provide an inventory of all existing trees or significant woody vegetation including size, health, species, and any proposed for removal.
 2. Credits shall be based on
 - a. 1 for 1 basis provided it meets the minimum specifications for new plants.
 - b. 2 for one for any tree larger than 6" DBH
 - c. 3 for one for any tree larger than 12" DBH.
 3. Trees or other existing landscape that contributes to the standard shall be identified on a landscape plan and the critical root zone shall be protected for the entirety of construction by a construction fence. Tree protection measures shall be based on applicable industry standards and best practices to ensure survival of the landscape.
 4. Preservation of trees may provide a credit towards meeting the Water Quality Volume in accordance with the Flood Control and Water Quality Protection Manual.
 5. Preservation of existing trees may also justify additional site or landscape design modifications subject to Sections 8.07 Landscape & Site Design; Modifications, 7.07 Parking and Access; Modifications, and 2.06. Site Plan procedures and criteria.
- D. **Design & Location.** The landscape required by Table 8-1 shall be arranged and designed to best achieve the design objectives of this section and intent of this article and, based on the context and adjacencies proposed on the site. Required plantings shall be planted in the following specific locations on the lot.
1. *Streetscape Trees.* Streetscape and frontage trees shall be located in line with other trees along the block to create a rhythm along the streetscape and promote enclosure of the tree canopy. In the absence of a clearly established line along the block, trees may be planted in the following locations in order of priority:
 - a. Centered between the sidewalk and curb where at least 6 feet of landscape area exists;
 - b. In tree wells that are at least 4 feet in all directions and at least 24 square feet located within the sidewalk (applicable on wider attached sidewalks or pedestrian-oriented commercial or mixed-use streets);
 - c. 5 to 10 feet from the back of curb where no sidewalk exists or from the sidewalk where the sidewalk is attached;
 - d. Within the first 5 feet of the front lot line where any constraints on the lot or in the right-of-way would prevent other preferred locations;
 - e. Ornamental trees may be substituted for large street trees only in situations where no other alternative is available due to constraints of the site or right-of-way conditions. Ornamental trees should be used where trees are to be located within 10 feet of any overhead wires or in landscape areas between 4 and 6 feet wide.
 2. *Frontage & Foundation Trees & Shrubs.* Foundation plantings shall be located in open spaces near the building or in planting beds associated with the design of any hardscape along the building frontage.
 - a. Ornamental and evergreen trees shall be located within 25 feet from the building.
 - b. Shrubs and other plantings shall be located within 6 feet of the foundation.
 - c. Where planting beds are used within hardscape around a foundation, they should be at least 4 feet deep, at least 60 square feet, and concentrated along at least 50% of the building frontage.
 - d. Use larger and vertical landscape elements to frame entries, anchor the corners of buildings, or break up and soften large building elevations.

3. *Parking Lot Landscape.* Parking lot landscape requirements shall be planted in perimeter buffers and internal islands planned and designed according to Section 7.05, Parking Design.
 - a. There shall be at least one large tree per 40 feet of parking lot perimeter, or one ornamental or evergreen tree per 25 feet of perimeter.
 - b. Evergreen trees shall only be permitted on the non-street perimeter buffer of parking areas and not in parking islands or streetscape or front buffers.
 - c. There shall be at least one tree per internal island. Internal islands over 300 square feet shall have one large tree or two ornamental trees per 300 square feet.
 - d. Shrubs shall be located to define parking lot edges, screen parking from adjacent sites, or create low barriers along sidewalks, drive aisles, and internal access streets.
 - e. Any parking within 30 feet of the street with a public sidewalk shall have a Type I buffer per and any parking area within 10 feet of any other property line shall have a Type II buffer Section 8.04.

5. *Visibility at Intersections.* Screens, buffers, and landscape shall be located and designed to maintain proper lines of sight at all intersections of streets, alleys, driveways, and internal access streets as provided in Section 3.01.D.2., Sight Distances. **[Note: Staff editing of 3.01 may result in removal of or reorganization of 3.01.D. Update with proper citation or move updated 3.01.D to this section if all of 3.01.D is remove.]**

6. *Specific Applicability.* Where landscape standards for different conditions or elements of a site overlap, effective site and landscape design may enable the space and plants to count toward more than one requirement, based on the greater plant requirement applicable to that area. For example, a buffer area required by Section 8.03 may also contribute to a parking area perimeter requirement, or a parking area perimeter may also contribute to a streetscape requirement, where the design can satisfy the greater of both requirements. Approval shall be subject to the Director determining that the design objectives of this section and intent of this article are achieved.

8.04 Buffers & Screening

- A. **Design Objectives.** Intense land uses or site elements shall be buffered and screened from streetscapes and adjacent property according to the following design objectives. These objectives shall be used in applying the buffer requirements in Table 8-2, Buffer Planting Requirements and Table 8-3, Buffer Application.
 1. Mitigate impacts of parking lots or vehicle circulation near streets or property lines with landscape barriers and low-level headlight screening.
 2. Buffer and screen commercial uses, parking lots, and service areas abutting residential property with a combination of dense vegetation or fences and walls.
 3. Soften transitions where changes in development patterns, intensity of land uses, or building scale occur.
 4. Screen service and utility areas of buildings and sites from adjacent property or streetscapes with architectural features, fences, or landscape that limit visibility or noise.
 5. Create landscape clusters that soften long expanses of building walls, fences, surface parking, or other similar areas.
 6. Use berms, vertical landscape, dense plantings, or other grade or spatial changes to alter views, subdue sound, and change the sense of proximity of incompatible elements.
 7. Address three layers of landscape, including: large trees (high-level – 30'+); evergreen or ornamental trees (mid-level – 6' to 30'); and shrubs, annuals, perennials, and ground cover (low-level – under 6'), to directly mitigate the potential impacts and adjacencies.

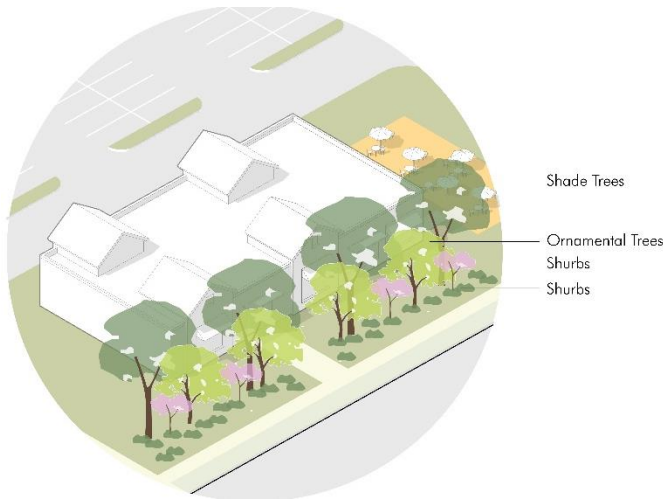


Figure 8-2 Buffer Layers

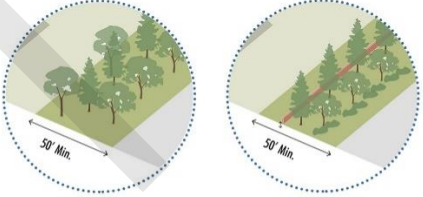
Effective buffer design should be based on the specific context, and the intent and degree of mitigation desired. Shade trees provide separation and mitigation at upper levels, evergreen and ornamental trees provide separation and mitigation at mid-levels, and shrubs or other smaller plants provide separation and mitigation at ground levels. Different levels may receive different priorities based on the specific context, potential impacts, and adjacencies.

- B. **Buffer Planting.** The planting requirements in Table 8-2: Buffer Planting Requirements shall be used to buffer and screen more intense uses or elements of sites according to the design objectives of this section. The buffer width is independent of and may include any setback, parking perimeter buffer, or other open space requirement so that the larger requirement controls.

Table 8-2 Buffer Planting Requirements

Type and Applicability	Buffer Planting Requirement	
<p>Type I – A low-level screen and physical separation used for aesthetic purposes, particularly around site utility elements, walkways, or parking areas along pedestrian oriented streetscapes.</p>	<p>Width: 6' min.</p> <p>Planting: 1 large tree per 40' or 1 ornamental per 20'; and 1 shrub per 5'</p> <p>Variation: the shrub rate may be reduced by 50% in combination with the following:</p> <ul style="list-style-type: none"> ▪ A 2.5' to 4' decorative wall or fence in constrained areas or along the streetscape; or ▪ 3' berm in areas that are at least 10' wide. ▪ Parking areas abutting public sidewalks that are at least 10' wide in the CC district, the buffer width may be reduced to 2', provided a 2.5' to 4' decorative wall or fence is used and the landscape is planted in tree wells within the parking area or right-of-way at required intervals. 	<p>Dense shrubs Decorative fence or wall Berm</p>
<p>Type II – A moderately planted area used to separate and soften transitions between more intense portions of sites between generally compatible land uses, or where buffers are necessary along collector or arterial streets.</p>	<p>Width: 10' min.</p> <p>Planting: 1 large tree per 40'; 1 ornamental or evergreen tree per 25'; and 1 shrub per 10'; and</p> <p>Variation: The shrub and ornamental/evergreen tree rate may be reduced by 50% and the width reduced to 5' with the following:</p> <ul style="list-style-type: none"> ▪ 4' to 6' high fence with at least 50% opacity 	<p>Shrubs and evergreens 6' fence or wall</p>
<p>Type III – A densely planted area intended to mitigate noise and create a visual screen for potentially incompatible land use adjacencies, or for large scale or intense uses along collector or arterial streets.</p>	<p>Width: 20' min.</p> <p>Planting: 1 large tree per 40'; and 1 ornamental per 25'; and 1 evergreen tree per 25'; and 1 shrub per 10'</p> <p>Variation: The shrub and evergreen tree rate may be reduced by 50% in combination with the following:</p> <ul style="list-style-type: none"> ▪ A 6' solid wall or fence; or ▪ A 3' high berm and 4' high fence with 50% opacity. 	<p>Separation + Planting 6'-7' fence or wall Berm</p>

Table 8-2 Buffer Planting Requirements

Type and Applicability	Buffer Planting Requirement
<p>Type IV - A densely planted area intended to separate incompatible situations or high-intensity uses.</p>	<p>Width: 40' min.</p> <p>Planting: 1 large tree per 40'; and 1 ornamental tree per 25'; and 1 evergreen per 15'</p> <p>Variation: The evergreen and ornamental tree requirement may be reduced by 50% where a combination of berms, fences, and/or shrubs accommodate the understory screening. The width may be decreased to 20' with a 25% increase in the plant rates.</p> <div style="text-align: right;">  </div>

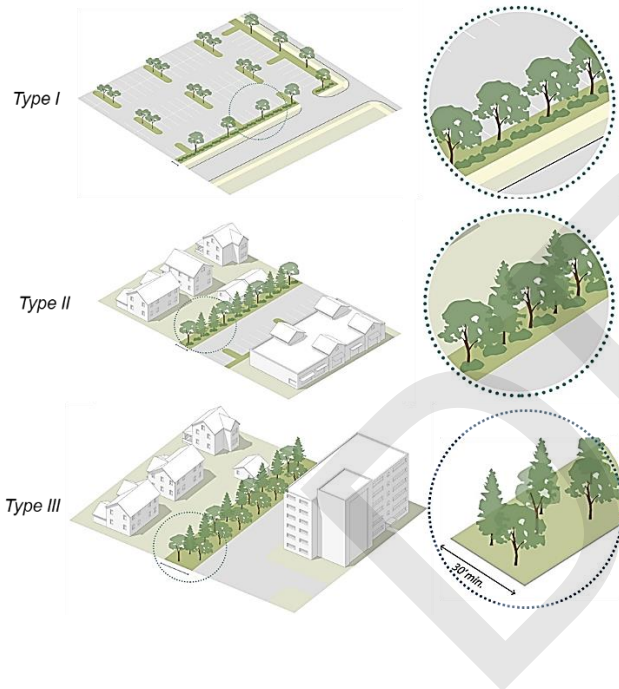


Figure 8-3 Buffer Types & Context
Application of the specific buffer type should be based on context and the adjacent site or projects.

C. **Buffer Locations.** Buffer types shall be required and applied as indicated in Table 8-3, Buffer Application.

Intensity of Adjacent Site		Intensity of Proposed Development			
		Low	Medium	High	Very High
Low		--	Type II	Type III	Type IV
Medium		Type II	--	Type II	Type III
High		Type III	Type II	--	Type II
Very High		Type IV	Type III	Type II	--
Use Intensity	Low	<ul style="list-style-type: none"> Residential: detached house; multi-unit house; row house; and small-lot apartment types 			
	Medium	<ul style="list-style-type: none"> Residential: medium- and large-lot apartment; or apartment complexes Nonresidential: churches, schools, or similar institutional uses; neighborhood retail (under 5K s.f.); office uses (under 2 stories); artisan or small manufacturing (under 10K); or similar uses that do not operate between 10PM and 7AM 			
	High	<ul style="list-style-type: none"> Nonresidential: general commercial uses that may be larger scale (over 5K); light manufacturing; or other higher intensity uses that operate beyond 10PM 			
	Very High	<ul style="list-style-type: none"> Nonresidential: heavy commercial uses (over 150K s.f.); uses with significant outside activity or storage; or heavy industrial and manufacturing uses 			
Other Applications		<ul style="list-style-type: none"> Parking areas within 20 feet of any public street or internal access street shall have a Type I buffer Any lots that back to a collector or arterial street require a Type III buffer, which may be incorporated into the right-of-way landscape. (See Sections 3.01 and 3.02 for better approach to design blocks and lots in association with street networks and open spaces, and not back to streets.) Any lots adjacent to a highway or expressway shall require a Type IV buffer for residential and Type III buffer for nonresidential 			

D. **General Screening.** All of the following shall be screened from streets or adjacent property by placement of buildings, open space, dense evergreen hedge, and landscape berm at least 3' high, a decorative opaque fence or wall complementing the architectural details and materials of the building, or a combination of these screening strategies. Where the design and placement of buildings, frontages, open space, buffers, and other site requirements do not adequately screen these elements, the Director may require additional planting to achieve the design objectives of this section.

1. Electrical and mechanical equipment such as transformers, air conditioners, or communication equipment and antennas whether ground-, wall- or roof-mounted.
2. Permanent or temporary outdoor storage areas.
3. Trash enclosures, and similar collection facilities for recycling or household goods.
4. Utility stations or fixtures.
5. Delivery and vehicle service bays, except that bays do not need to be screened from adjacent property with the same or more intense zoning.
6. Large blank walls visible from public streets, public or common areas or other sensitive boundaries in association with the buffer standards.

7. Nonresidential parking or residential parking lots with over 10 spaces adjacent to residential lots.

E. **Fences & Walls.** Fences and walls for individual property shall be located according to Table 8-4, Fence & Wall Standards.

Table 8-4: Fence & Wall Standards		
	Residential	Commercial & Industrial
Front	<ul style="list-style-type: none"> ▪ 3.5' high ▪ 4.5' high if at least 50% open 	<ul style="list-style-type: none"> ▪ 3' high ▪ 4' high if at least 50% open
Side & Rear	<ul style="list-style-type: none"> ▪ 6' if behind the front building line 	<ul style="list-style-type: none"> ▪ 8' if behind the front building line
Setbacks	<ul style="list-style-type: none"> ▪ All fences shall be at least 18 inches from any public sidewalk, except front fences meeting the front fence design standards may be built on the property line even if abutting a sidewalk. 	
Generally	<ul style="list-style-type: none"> ▪ Ornamental enhancements such as a trellis or an arch associated with an entry or gateway may be up to 8' high. ▪ All fences or walls located in required yards and setbacks shall be designed so the most finished side faces out to the street or adjacent property. ▪ Fences or walls meeting required building setbacks can exceed the fence height limits, but may be limited by development standards, building codes, or other public health and safety standards. 	

1. **Materials.** All fences and walls shall be made of the following:
 - a. Masonry, including brick, stone, integrally colored concrete, textured concrete, smooth or textured concrete masonry unit (CMU), stucco, or other similar material.
 - b. Decorative metal, such as cast or wrought iron or other decorative metal.
 - c. Chain link – steel, aluminum, or vinyl clad except prohibited for any front fence in residential or commercial districts;
 - d. Wood materials designed specifically for fencing purposes. Wood fence material shall meet EPA residential use standards.
 - e. Vinyl, plastic, or composite fence products designed specifically for fencing purposes.
 - f. Steel or aluminum woven wire designed for fencing. Barbed or other sharp wire shall only be permitted to the side or rear of commercial and industrial fences and only if all portions of barbed wire are above 6 feet high.
2. **Sports and Recreation Fences.** Fences for sports and recreation facilities, or for any other similar public facility, may be up to 10 feet generally; or up to 14 feet for tennis, pickleball, or similar sport courts if at least 50% open above 7 feet high; and taller to serve the functional need for backstops or golf course protection.
3. **Sight Distances.** All fences, walls or screening shall be located out of the sight distances in Section 3.01.D.2, Sight Distances, or otherwise limited to no more than 3 feet high in these areas.
4. **Drainage Easements.** No fence shall be constructed which could impede the flow of drainage waters. All fences must be installed in a manner that will not constrict the water flow planned for proper drainage of the lots in a subdivision.

8.05 Plant Specifications

- A. **Design Objectives.** The plant specifications have the following design objectives:
 1. Ensure the longevity and survival of landscape investments with proper species, location, installation, and maintenance of plants.
 2. Promote regionally appropriate strategies, including limiting risk of disease or infestation through diversity of urban forest on an area- or city-wide basis.
 3. Establish minimum standards that balance immediate conditions with reasonable long-term growth and performance of landscape plans.
 4. Utilize draught tolerant plants and landscape designs that conserve water and provide lower maintenance through different seasonal conditions.

- B. **Species.** All trees and shrubs shall be selected and planted according to plant lists and industry guides administered by and available from the Planning and Development Department, and listed in Appendix A. In addition to any species on these lists, alternatives may be proposed and approved as part of the site plan provided they:
 1. Are documented by a landscape architect or other credible information comparable in type and performance to any species on this list;
 2. Are adaptable to the climate, region, and the specific conditions in which they are proposed; and
 3. Are not invasive or otherwise problematic to the overall health of the landscape.

- C. **Plant Specifications.** All landscape materials shall meet the American Standards for Nursery Stock standards, and be selected for its native characteristics or survival in the climate and region. Plants shall meet the following specifications at planting:

Table 8-5: Plant Specifications	
Type	Specification
Large Tree	1.5" DBH; Mature height of at least 30'; Deciduous tree
Ornamental Tree	1.0" DBH ; 8' minimum planting height for multi-stemmed; Mature height of 15' – 30'; Deciduous tree
Evergreen Tree	6' minimum planting height; Mature height of at least 10'. Evergreens with mature heights of 30' or more may be classified as large trees. Evergreen or conifer tree
Shrub	5-gallon minimum container or 18" minimum planting height; 36" minimum mature height
Ground Cover	Areas designed for vegetative cover shall have 50% ground cover at the time of planting and full coverage within 2 growing seasons.

DBH – Diameter at breast height

XY. Tree Diversity

[The following subsection is a possible addition to improve the diversity and long-term health of the urban forest. It is not in the initial draft since this issue may require further policy discussions and be adjusted based on the base draft approval of street tree and site design tree standards. It may be added to a later draft in this process or reserved for further discussion and potential adoption at a later date.]

[This would be a new sub-section added to 8.05 as D. and other subsections relabeled accordingly.]

- D **Tree Diversity.** The required trees planted shall promote diversity with the following species selection criteria.

Table 8-##: Tree Diversity	
Required Trees	Diversity
1 - 4	<ul style="list-style-type: none"> No specific requirement, but trees should be diversified from existing trees in the vicinity.
5 - 10	<ul style="list-style-type: none"> At least 2 genus No more than 50% of any one species
11 - 20	<ul style="list-style-type: none"> At least 3 genus; and At least 4 species No more than 40% of any one species
21 or more	<ul style="list-style-type: none"> At least 3 genus; and At least 5 species No more than 33% of any one species

* Street trees may be uniform species to implement a streetscape design or existing pattern on a block, and diversity should be achieved through variation of site trees or by street tree diversity on broader block scale through streetscape master plans.

XY. Tree Protection

[The following section is a possible addition to improve implement a baseline tree protection. It is based off an approach developed for the Mid-America Regional Council (Kansas City MPO), and is designed to be calibrated to various levels of protection dependent on the jurisdiction policy and political will. It is not in the initial draft since this issue may require further policy discussions and direction. It may be added to a later draft in this process or reserved for further discussion and potential adoption later.]

[This would be a new section 8.06. and other sections renumbered accordingly.]

8.06 Tree Protection

- A. **Design Objectives.** The tree protection standards in this section have the following design objectives:
 1. To preserve the city's character by preventing indiscriminate removal or destruction of trees.
 2. To improve property values through implementation and management of street trees, and through maintaining an acceptable tree canopy over all property.
 3. To increase the environmental performance of streetscapes and site design, recognizing the air quality, stormwater filtering and infiltration, habitat maintenance, and energy reduction benefits provided by mature trees.
 4. To enhance compatibility of different projects with established buffers that mitigate impacts of development or other natural ambient conditions.
 5. To retain high priority trees and limit unnecessary tree removal on redeveloped or undeveloped sites.
 6. To establish tree protection measures during development and reward tree protection efforts with flexible development standards.
 7. To preserve exceptional trees that are unique, native, possess exceptional aesthetic value, or are otherwise considered a valuable community resource.

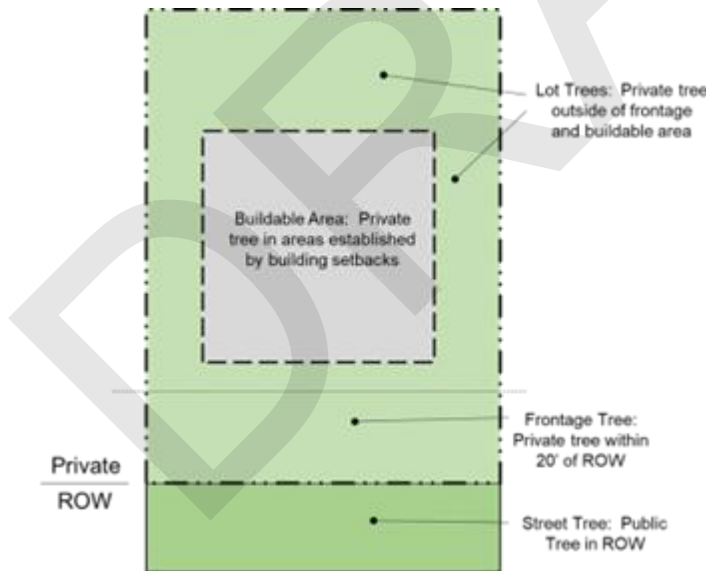
- B. **Applicability.** The provisions of this section shall specifically apply to:
 1. All public right-of-way or other municipal property, including parks, open spaces, and municipal grounds.
 2. All development that requires a landscape plan according to Section 8.02.
 3. The following additional development activities:

- a. Any plat that disturbs more than 5,000 square feet of land;
- b. Any new residential structure is built on a vacant lot; and,
- c. Any demolition or grading on an existing lot.

C. **Protected Trees.** Trees are protected based on their size and location, as specified in Table 8.## and Figure 8.##. Protected trees require mitigation if removed; priority trees require special circumstances and removal approval and require additional mitigation if removal is approved.

Table 8-##: Protected Trees				
Location	Protected Tree	Mitigation If Removed	Priority Trees [1]	Mitigation If Removed
Area 1: Street Trees	--	--	All trees	<ul style="list-style-type: none"> ▪ 1 Tree for every 6" caliper removed ▪ Maximum 4 to 1 replacement.
Area 2: Frontage Trees	2" – 6"	1 to 1 replacement	> 6"	<ul style="list-style-type: none"> ▪ 1 Tree for every 6" caliper removed ▪ Maximum 3 to 1 replacement.
Area 3: Lot Trees	4" – 20"	1 to 1 replacement	> 20"	<ul style="list-style-type: none"> ▪ 1 Tree for every 12" caliper removed ▪ Maximum 3 to 1 replacement.
Area 4: Buildable Area Trees	6" – 30"	1 to 1 replacement	> 30"	<ul style="list-style-type: none"> ▪ 1 Tree for every 12" caliper removed ▪ Maximum 2 to 1 replacement.
Any Area	--	--	Any Missouri State Champion Tree	<ul style="list-style-type: none"> ▪ 1 Tree for every 6" caliper removed ▪ Maximum 4 to 1 replacement.

[1] Priority trees may only be removed as provided in Section 8.06.F.



1. **Area 1:** Area 1, "street tree" includes any tree that is in the public right-of-way.
2. **Area 2:** Area 2, "frontage tree" includes any tree that is 3" caliper or more, on private property and within 20 feet of the front lot line.
3. **Area 3:** Area 3, "lot tree" includes any tree that is 6" caliper or more, on private property, but outside of the frontage or buildable area.
4. **Area 4:** Area 4, "buildable-area tree" includes any tree that is 6" caliper or more, and in the buildable area determined by the zoning setbacks applicable to the principal building.

Figure ###. Tree protection provisions and required mitigation is based on the area of the lot and the size of trees in particular areas.

- D. **Exceptions – Authorizations for Removal.** The Director may consider an exception to remove a tree prohibited from removal under Section 8.06.C. only upon a written request indicating the specific tree and documentation establishing justification for removal. The Director will grant the exception if:
1. The tree is dead by natural or environmental causes;
 2. The tree is diseased or dying, and constitutes a threat to healthy trees, property, or public safety; or
 3. Removal of the tree is necessary for construction, development or redevelopment under the following criteria:
 - a. All reasonable efforts have been made to avoid removing the tree through comparable alternative designs;
 - b. The presence of the tree places an undue financial burden on the property owner or applicant; and
 - c. No other reasonable accommodations, including adjustments to the otherwise allowable building footprint, can be made to preserve the tree.
 4. Emergency situations such as storm damage, emergency access or other safety measures make it necessary to remove or alter the tree. In such cases, no permit or authorization is needed at the time of the occurrence, but a permit and any necessary mitigation shall be processed after the emergency is addressed.
 5. The tree is an invasive or undesirable species. An “Undesirable Tree Species List” is available from the Director. These trees are not protected and should be removed from all sites, whether through development or property maintenance. No mitigation or specific authorization is required for their removal.
- E. **Protection Measures.** All trees that are prohibited from removal and any other tree that will remain on site according to the Tree Protection and Removal Plan shall be protected by the following measures.

Tree Protection and Removal Plan. A tree protection and removal plan shall be provided for all applicable projects where:

- a. The property has a tree protected by Section 8.06.C;
- b. As part of a landscape plan associated with development, existing trees will be retained and protected to meet landscape requirements; or,
- c. Any trees are proposed to be removed as part of a building permit or associated with grading or demolition.

The tree protection and removal plan shall show all existing trees sizes and species, identify trees proposed for removal and trees to be retained, and include locations of protection fences and other protection measures required by this section.

2. **Fences.** Protective/temporary fences shall be required for all trees noted to remain on the tree protection and removal plan, or otherwise not authorized from removal. prevent

infringement on the root system from any construction-related activities and be installed according to Table 8.##

Table 8-##: Protective Fencing	
Tree Size	Fenced Area (lessor of)
> 30" DBH	20' from center of tree
20" – 30" DBH	15' from center of tree
< 20" DBH	10' from center of tree
All required protective / temporary fencing shall be at least 4' high	

- a. Fences shall be a snow fence, chain-link fence, orange vinyl construction fence, or other similar fencing.
- b. Fenced areas shall exclude any preexisting structures, foundations, slabs, roadways, sidewalks, and driveways. The fence shall be installed along the edge of the driveways/roadways encompassing the tree to restrict access from the street side.
- c. All fences shall appear on construction documents and be installed prior to any other construction-related activity.
- d. The fence shall remain in place until all other construction-related activity has been completed or final grade achieved.
- e. *Prohibited Activities.* Except for work that is necessary related to utility lines or activity that merely disrupts the surface of the ground, the following activities are prohibited in relation to the protected fences around root zones of all trees.
 - a. No materials for construction or waste accumulated due to excavation, demolition, or construction shall be placed under the canopy.
 - b. No equipment shall be cleaned and no other materials or liquids shall be deposited or allowed to flow over land within the limits of the canopy, including paint, old solvents, asphalt, concrete, mortar, or similar materials.
 - c. No signs, wires or other attachments other than lightening protection or support structures shall be attached to any tree.
 - d. No vehicular and/or construction equipment traffic or parking shall take place within the limits of the protective fencing.
 - e. No grade changes (cut or fill) shall be allowed within the limits of the drip line.
 - f. New paving with asphalt, concrete, or other impervious materials shall be avoided within the limits of the drip line or otherwise protected root zone, and no new work shall be permitted in a manner which may be expected to severely damage or kill a tree.
 - g. No other act by which soil is removed and land changed that may result in the movement of sediments, and may include tilling, clearing, excavation, or removal of vegetation that may cause unmanaged stormwater runoff and drainage in the direct path of the drip line.

F. **Violation and Enforcement.** Removal, damage or impairment of any protected tree, except as provided in this section, is a violation of this ordinance, enforceable as provided in Section 1.07, and each tree shall be considered a separate incident. Any fines and penalties shall be in addition to the mitigation measures required in sub-section C. for removal of protected trees.

- D. **Stormwater Treatment.** Landscape amenities that incorporate stormwater treatment are recommended, provided they can meet both the landscape design standards and the stormwater management performance standards. Techniques such as bioretention and rain gardens should be used to infiltrate runoff from parking lots, streets, civic spaces, and other impervious surfaces.
- E. **Planting & Maintenance.** All landscape plans shall include installation specifications, method of maintenance including a watering system and statement of maintenance methods. At a minimum landscape plans shall demonstrate the following:
1. No plants shall be planted over any area that has been compacted. All planting areas shall be excavated and filled with amended soils to a depth of at least 24 inches, or additional sufficient depth to reach existing soils and remove any impervious material, compacted soils, stones 1 inch or larger, or any other material harmful to plant growth.
 2. All plant materials and planting areas shall be prepared and planted according to American Standard for Nursery Stock (ANSI) details and ensure proper soil quality and conditions.
 3. All plantings shall be properly maintained. Plant materials which fail to grow within a 2-year period or which exhibits evidence of insect pests, disease, and/or damage shall be appropriately treated, and any plant in danger of dying may be ordered by the Director to be removed and replaced.
 4. The Director may defer planting for up to 9 months to account for seasonal conditions that make planting impractical and grant any conditional or temporary permits necessary to ensure planting occurs. The Director may approve substitutions of equal or better-performing species where a specific plant on an approved plan is not available in the region due to circumstances beyond the applicants control.
 5. All elements of an approved landscape plan including plant materials shall be considered elements of the project in the same manner as parking, buildings or other details. Deficiencies of any approved landscape plan at any point may be enforced as a violation of the provisions of this ordinance.

8.07 Outdoor Lighting

- A. **Design Objectives.** Outdoor lighting of sites and buildings shall meet the following design objectives:
1. Provide safety and security in publicly accessible areas.
 2. Create comfort and atmosphere with softer and warmer lighting in gathering spaces, social places, and pedestrian-oriented areas and streetscapes.
 3. Limit backlight, uplight, glare, or other impacts that outdoor lighting could have on adjacent sites.
 4. Accent the architectural features of buildings, gateways, or other portions of sites visible from the streetscape or other public spaces.
 5. Design the appropriate scale, location, and type of light fixtures considering pedestrian-oriented or vehicle-oriented portions of sites, and the context and character of distinct areas.
 6. Reduce light pollution and comply with the “dark sky” principles for responsible outdoor lighting, including useful, targeted, controlled, low-level, and color-appropriate lighting.
 7. Develop energy efficient lighting strategies in balance with other site lighting objectives.
- B. **Mounting Height.** All exterior lighting shall be limited to the mounting heights specified in the following table:

Table 8-6: Maximum Light Mounting Height	
<i>Driveways and Parking Areas</i>	<ul style="list-style-type: none"> ▪ 20' in residential districts; ▪ 25' within 100' of a residential use or residentially zoned property or within 25' of any street.. ▪ 35' in all other districts or situations. ▪ The maximum permitted average illumination of all parking lots is 5 footcandles
<i>Pedestrian Walkways, Plazas or Courtyards, and Pedestrian-oriented Streetscapes</i>	<ul style="list-style-type: none"> ▪ 16'
<i>Facade Lights</i>	<ul style="list-style-type: none"> ▪ Below the eave or cornice line, provided the light is directed downward or otherwise designed and located to limit up lighting beyond the facade.
<i>Other Site Lighting</i>	<ul style="list-style-type: none"> ▪ 12' nonresidential; ▪ 7' residential
<i>Building Mounted Security Lights</i>	<ul style="list-style-type: none"> ▪ May be mounted at heights required to provide adequate security provided all efforts be made to mitigate off-site impacts including dimmers, timers, sensors, shields or other technology.
<i>General</i>	<ul style="list-style-type: none"> ▪ Light poles shall be setback from adjacent property at least 1/3 of the height.

- C. **Shielding.** All exterior fixtures shall be shielded and installed so that the direct illumination shall be confined to the property boundaries of the source and use shields according to Table 8-7.

Wattage or Mounting Height	Shield Type		
	Full Cutoff ^a	Cutoff ^b	Semi-cutoff ^c
<i>Lights mounted above 25'; or Lights above 5,000 lumens</i>	Required	Prohibited	Prohibited
<i>Lights between 2,400 and 5,000 lumens and mounted below 25'.</i>	Permitted	Required	Prohibited
<i>Lights below 2,400 lumens and mounted between 12' and 25'</i>	All shielding types permitted		
<i>Lights below 2,400 lumens and mounted less than 12'</i>	No shielding required		
<i>Decorative lighting below 200 lumens at any height</i>	No shielding required		

- a Full cutoff fixtures emit 0% of its light above 90 degrees and 10% above 80% from horizontal.
 b Cutoff fixtures emit no more than 2.5% of its light above 90 degrees and 10% of its light above 80% from horizontal.
 c Semi-cutoff fixtures emit no more than 5% of its light above 90% and 20% of its light above 80 degrees.

- D. **Design & Performance Standards.** In addition to the height and location standards, exterior site lighting shall meet the following performance standards:
1. Light locations, illumination levels, and fixtures shall be designed to minimize backlighting, uplighting, and glare.
 2. Light levels at the perimeter of property shall not exceed:
 - a. 0.3 footcandle in or abutting residential zoning districts for lights less than 15 feet high
 - b. 0.5 footcandle in or abutting residential zoning districts for all other lights.
 - c. 1.0 footcandle along any other property boundary.
 3. All outdoor lighting shall have a correlated color temperature (CCT) of no more than 3,000K to minimize blue light emission glare.

4. The style of light standards and fixtures shall be consistent with the style and character of architecture proposed on the site and building.
 5. Lighting shall be designed to meet the functional and security needs of the site, without adversely affecting adjacent properties. Performance and operational characteristics such as dimming interfaces or timers that reduce lights to minimal security levels for off hours should be used.
 6. No lighting shall be permitted in required buffer in Section 8.04, except if the buffer yard includes a publicly accessible sidewalk or trail.
 7. Lighting plans shall demonstrate compliance with industry standards and guidelines for environmental and energy performance, including the fixture types, light source, and energy source.
 8. A photometric plan prepared by a qualified professional may be required by the PD Director for large-scale uses or where certain compatibility and adjacency issues exist because of anticipated lighting.
- E. **Exemptions.** The following are exempt from the specific lighting specifications and standards, but still may be subject to general landscape and sight design standards or other conditions and industry standards to mitigate impacts as much as practical:
1. Outdoor recreational uses
 2. Emergency warning or automated security lighting that is only activated during specific events
 3. Temporary holiday lights

8.07 Modifications

The PD Director or the Planning Commission may consider alternative landscape and site design plans through the site plan process in Article 2, Procedures. In addition to the general site plan criteria in Sections 2.03, any proposed alternative landscape and site design shall result in one or more of the following additional benefits:

- A. Better allocation of plants in relation to the following areas in order of priority of design objectives:
 1. Mitigating any off-site impacts on adjacent property due to higher intensity activities
 2. Relationship to streetscapes and abutting civic or open spaces.
 3. Enhancements to active or social spaces within the site.
- B. Preserve existing, established, healthy and desirable landscape and improve the environmental performance of the site.
- C. Improve the longevity, survival, health, or general species mix of plant materials specific to the context and vicinity of the site
- D. Lighting results in better compliance with industry standards and guidelines of the Illuminating Engineering Society and International Dark Sky Association (IES / IDA).