

## Chapter 5: Site, Development, and Operational Standards

### Article D1: Landscaping Standards

#### Sections:

- 9-5D1-1 Purpose, Applicability, and Review
- 9-5D1-2 Landscaping Standards
- 9-5D1-3 Landscape Care and Maintenance
- 9-5D1-4 Tree Preservation
- 9-5D1-5 Preferred Plant List

#### **Draft Zoning Code Changes:**

- *This is a new article, which includes all of the landscaping requirements for new development. Standards cover landscape design, plant type, planting size, planter requirements, and special standards for specific development types.*
- *Landscape requirements are no longer based on percentage of site in all districts (except single family residential). Focus is on streetscape and special areas on site.*
- *A new section on tree preservation, consistent with the general plan, has been added. The regulations focus on trees removed as part of development.*

#### **9-5D1-1 Purpose, Applicability, and Review**

##### **A. Purpose**

This article establishes minimum landscape requirements to enhance the appearance of developments, reduce heat and glare, control soil erosion, conserve water, improve air quality, ensure ongoing maintenance, and ensure that landscape installations do not create hazards for motorists or pedestrians.

##### **B. Applicability of Standards**

The regulations of this article apply to new and existing development, as follows. Deviations from the development standards of this article may be allowed on a case-by-case basis by the designated approving authority through site plan and architectural review.

1. **New Projects.** New commercial, industrial, mixed-use, multi-family residential, and single-family residential subdivisions shall be reviewed by the designated approving authority to ensure landscaping is provided in compliance with the requirements of this article.
2. **Existing Development.** Where an existing nonresidential, mixed-use, and/or multi-family residential project requests an amendment that increases the building square footage by ten percent (10%) or more, the designated approving authority shall evaluate the existing landscape to ensure compliance with applicable requirements of this article.

### C. Submittal Requirements

When this article is applicable to new projects or existing development, preliminary and final landscape plans shall be submitted as follows and review of such plans shall be conducted as part of the site plan and architectural review process.

1. **Preliminary Landscape Plan.** A preliminary landscape plan shall be submitted as part of the site plan and architectural design review application. This plan must show conceptual locations for trees, shrubs, ground cover, and other landscape components, quantity, and size. Plans for the retention and/or removal of existing trees shall also be included.
2. **Final Landscape Plan.** A final landscape plan shall be submitted in conjunction with site improvement plans. The final landscape plans shall be in substantial compliance with the approved preliminary landscape plan. Final plans shall show the exact location of and irrigation for trees, shrubs, and ground cover and shall include, at a minimum, plant name, plant quantity, plant size, location of impervious surfaces, utilities and lighting, and irrigation system. Existing trees to be removed or retained shall also be included. The final plan should include a water budget that includes the estimate water use (in gallons), the irrigated area (in square feet), precipitation rate, and flow rate in gallons per minute. If landscaping is not exempt from the water efficient landscape requirements developed by the state, those items listed in article 9-5D2 will also be required.

### D. Review Process

When the requirements of this article are applicable, the following landscape plan review process shall be conducted in conjunction with site plan and architectural review for the proposed project, pursuant to the requirements of section 9-2B-13 (site plan and architectural review).

1. **Approving Authority.** The designated approving authority shall be the same as the designated approving authority of the entitlement for new projects or existing development.
2. **Approval of Plans.** The designated approving authority shall review the preliminary landscape plan. Upon approval of the preliminary landscape plan, a final landscape plan shall be submitted and must be approved with building permits or planning entitlements for new projects or applicable expansions to existing development as established above.
3. **Approval Required.** The landscaping shall not be installed until the applicant receives approval of the final landscape and irrigation plan by the approving authority and any applicable permits have been issued.
4. **Changes to Final Plans.** Changes to the approved final landscape plans that affect the character or quantity of the plant material or irrigation system design are required to be resubmitted for review and approval prior to installation.

## 9-5D1-2 Landscaping Standards

### A. General Location for Landscape Improvements

Landscaping shall be provided in the following locations, unless the designated approving authority determines that the required landscape is not necessary to fulfill the purposes of this article. Nothing in this article is intended to discourage landscape areas outside and beyond the minimum requirements listed herein.

1. **Setbacks/Buffers.** All setback and buffer areas required by this title shall be landscaped in compliance with this article except where a required setback is occupied by a sidewalk or driveway, or is enclosed and screened from abutting public rights-of-way.
2. **Unused Areas.** All areas of a project site not intended for a specific use or purpose in conjunction with a current application, including pad sites being held for future development, shall be landscaped in compliance with this article.
3. **Parking Areas.** Within parking lots, landscaping shall be used for shade and climate control, to enhance project design, and to screen the visual impact of vehicles and large expanses of pavement consistent with the requirements of this article.
4. **Streetscape (Parkway) Landscaping.** As part of new subdivisions or non-industrial projects, landscaping along public streets in the form of parkways and medians shall be provided consistent with the requirements of the general plan and this article.

**Figure 9-5D-2-A1:  
REQUIRED LANDSCAPE AREAS**



**Setbacks and Buffer Areas**



**Unused Areas**



**Parking Areas**



**Streetscape (Parkway)  
Landscaping**

## **B. Landscape Design**

Landscaping shall be designed as an integral part of the overall site plan with the purpose of enhancing building design and public views and spaces, and providing buffers, transitions, and screening. At a minimum, the following landscape design requirements shall apply:

1. Planting design shall have focal points at project entries, plaza areas, and other areas of interest using distinct planting and/or landscape features.
2. As appropriate, building and site design shall include the use of pots, vases, wall planters, and/or raised planters, as well as flowering vines, both on walls and on arbors.
3. Landscaping shall be designed with pedestrian paths throughout the landscape areas connecting designated on-site pedestrian circulation.

4. Amenities such as seating areas shall be incorporated. Entry plazas, bicycle parking, and transit shelters are allowed within landscape areas.

### C. Plant Type

Landscape planting shall emphasize drought-tolerant and native species (especially along natural, open space areas), shall complement the architectural design of structures on the site, and shall be suitable for the soil and climatic conditions specific to the site.

1. **Planting Layout and Plant Diversity.** Plant selection shall vary in type and planting pattern. Informal planting patterns are preferred over uniform and entirely symmetrical planting patterns. Use of deciduous flowering trees and shrubs and colorful plantings is encouraged in conjunction with evergreen species. Groupings of shrubs shall contain multiple plant types, interspersed with varying heights and blooming seasons for year-round interest.
2. **Street and Parking Lot Trees.** Street and parking lot trees shall be selected from the city's adopted master list of street trees and parking lot trees. A minimum of 30 percent (30%) of the street trees and parking lot trees, respectively, shall be an evergreen species.
3. **Tree Root Barriers.** Trees planted within five feet (5') of a street, sidewalk, paved trail, or walkway shall be a deep-rooted species or shall be separated from hardscapes by a root barrier to prevent physical damage to public improvements.
4. **Turf Limitations for Residential Uses.** High-water-use turfgrasses and other similar plantings shall only be utilized in high-use areas with high visibility or functional needs and shall be limited to twenty-five percent (25%) of all irrigated, landscape areas. The designated approving authority may grant an exception to this limitation when only drought-tolerant turfgrasses are used.
5. **Turf Limitations for Commercial, Industrial, and Mixed Uses.** The use of drought-tolerant turfgrass shall be required for all proposed turf areas.

### D. Planting Size, Spacing, and Planter Widths

In order to achieve an immediate effect of a landscape installation and to allow sustained growth of planting materials, minimum plant material sizes, plant spacing, and minimum planter widths (inside measurements) are as follows:

1. **Trees.** The minimum planting size for trees shall be fifteen (15) gallon, with twenty-five percent (25%) of all trees on a project site planted at a minimum twenty-four inch (24") box size. For commercial, office, community/civic, and industrial development, tree spacing within perimeter planters along streets and abutting residential property shall be planted no farther apart on center than the mature diameter of the proposed species. Minimum planter widths shall be five feet (5').
2. **Shrubs.** Shrub planting shall be a minimum five (5) gallon size, with a fifteen (15) gallon minimum size required where an immediate landscape screen is conditioned by the designated approving authority (e.g., screening of headlights from drive-through aisles). The minimum planter width for planters with only shrubs (no trees) is four feet (4').
3. **Ground cover.** Plants used for mass planting may be grown in flats of up to sixty-four (64) plants or in individual one (1) gallon containers. Rooted cuttings from flats shall be planted no farther apart than one foot (1') on center, and containerized woody, shrub ground cover plantings shall be planted no farther apart than three feet (3') on center in order to achieve full coverage

within one (1) year. Minimum planter width for ground cover is two feet (2'), with the exception of sod, which requires a minimum planter width of eight feet (8').

4. **Vines.** Vines are normally planted to provide landscaping screening of a wall or as part of a trellis to screen other site improvements that require screening. Where provided, vines shall be planted every two feet (2') on center in a planter with a minimum width of two feet (2').

**E. Special Landscape Requirements**

In addition to the general requirements above the following requirements apply to the special types of landscaping.

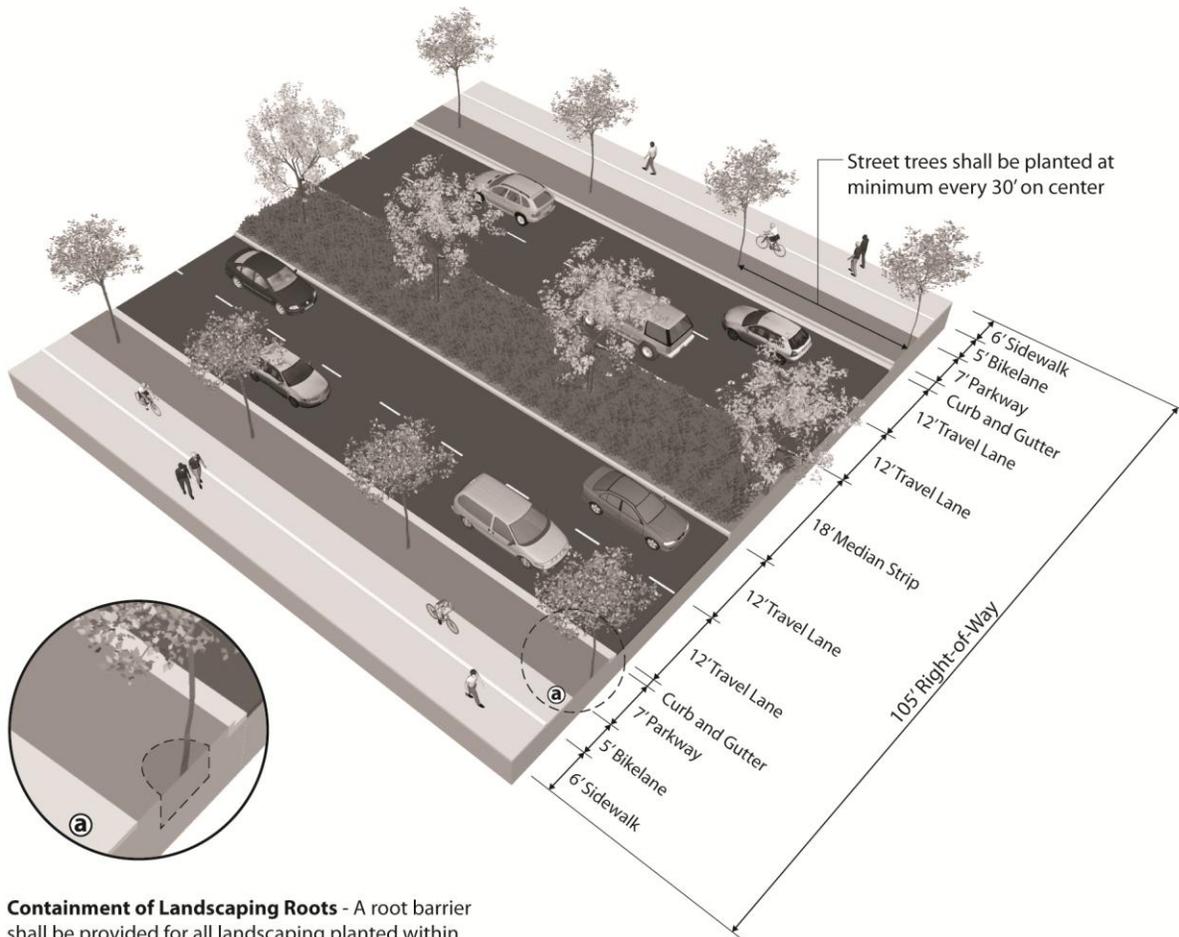
1. **Streetscape Landscaping.** Consistent with the city’s general plan and improvement standards, landscaping shall be provided along all public streets within city right-of-way maintained by adjacent owner. Depending upon the classification of the street, landscaping shall be required in a parkway between the front of sidewalk and the back of curb and within a planted median (where designated by the general plan). The form, width, and quantity of landscaping shall be consistent with the following standards:
  - a. Elements and widths. Landscaping within rights-of-way shall be provided consistent with the standards of table 9-5D1-2-E1 (typical street elements and widths). The designated approving authority may allow for deviations from these standards through the tentative map process or site plan review process to appropriately tie into adjacent existing conditions.

TABLE 9-5D1-2-E1 – TYPICAL STREET ELEMENTS AND WIDTHS			
Street Classification	Median Strip	Parkway <sup>6, 7</sup> (each side)	Sidewalks (each side)
Arterial	None	7'	6' <sup>1</sup>
Median Parkway	18'	7'	6' <sup>1</sup>
Collector			
No on-street parking	None	7'	6'
With on-street parking	None	7'	6'
Downtown Street		See chapter 9-6	
Local Residential Street	None	7'	5'
Cul-de-Sac or other dead-end street serving <10 homes	None <sup>2</sup>	7' <sup>3</sup>	5' <sup>4</sup>
Rural Street	None	None <sup>5</sup>	None <sup>5</sup>

**Notes**

1. Where inadequate room exists to provide safe bike travel in the street, large sidewalks of at least ten feet (10') in width shall be installed to protect children and allow bicycles on the sidewalk.
2. As an alternative to providing a parkway on either side of the street, a five foot (5') median may be provided.
3. May be eliminated in favor of a median strip as provided in note 1.
4. May be eliminated at bulb.
5. Shall be a dirt/gravel road shoulder.
6. Parkways not required along industrially designated properties.
7. Exceptions may be allowed to better tie into adjacent properties with existing improvements or where existing conditions are undersized.

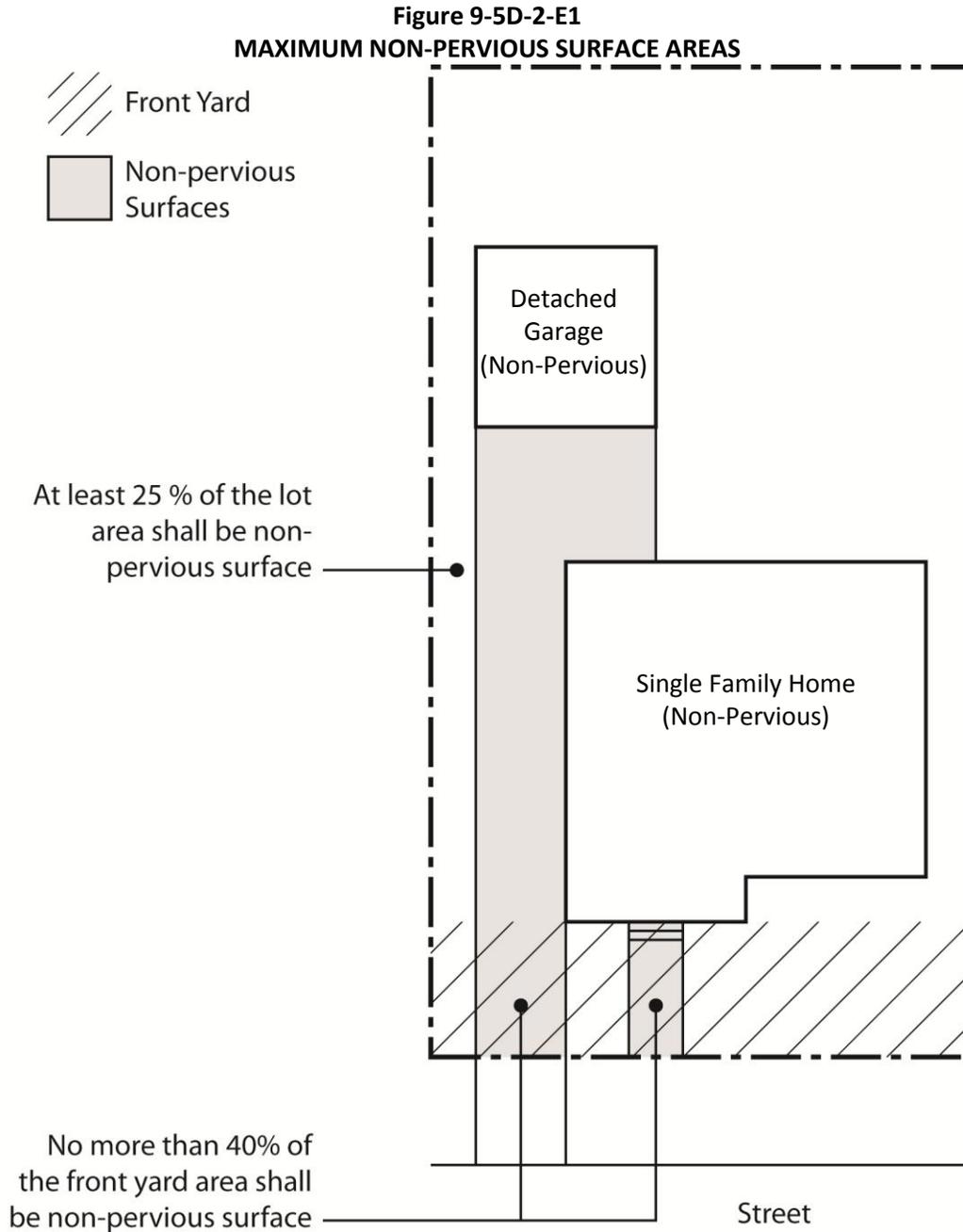
**Figure 9-5D-2-E1**  
**TYPICAL STREET ELEMENTS AND WIDTHS AS SHOWN FOR A MEDIAN PARKWAY STREET**



**Containment of Landscaping Roots** - A root barrier shall be provided for all landscaping planted within parkways and median strips

- b. Landscape design. Landscaping within parkways and medians shall be consistent with the following:
  - i. Street trees. Street trees shall be provided a minimum of every thirty feet (30') on center. Tree species shall be approved by the city as part of the improvement plan review process and shall be selected from a city-approved tree list. Trees shall be planted ten feet (10') away from alleys, driveways, fire hydrants, water lines, and sewer lines and three feet (3') from gas, electrical, telephone, cable television, and adjoining property lines.
  - ii. Ground cover. Ground cover shall be provided within all parkways and medians as follows:
    - 1. Parkways. Ground cover in parkways shall consist of a variety of low-growing, low-maintenance plantings to withstand the local climate and potential pedestrian traffic. Turf is not allowed if width available is less than eight feet (8').

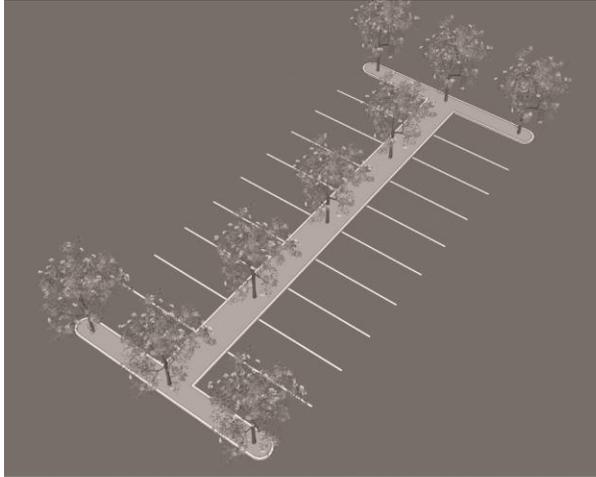




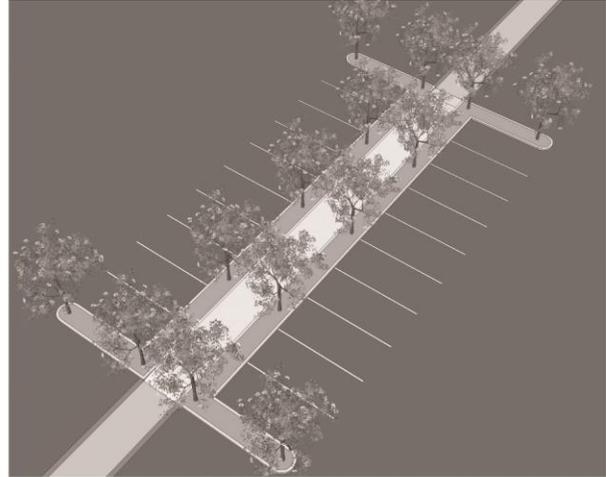
5. **Project Entry Landscaping.** Entries to multi-tenant projects (both residential and nonresidential) shall be designed as a special statement reflective of the character and scale of the project to establish identity for tenants, visitors, and patrons. Flowering access plantings and specimen trees shall be used to reinforce the entry statement.
6. **Landscaping of Parking Lots.** Parking lots, except those specifically exempted in subsection 9-5E-4-B (not considered parking), shall be landscaped as follows:
  - a. Landscape planter minimum dimensions. Where provided, the width of the planter area shall be five feet (5'). Where turf is provided, the minimum width shall be eight feet (8').

- b. A pedestrian path leading from the parking field to the main building(s) shall be provided for every two hundred (200) spaces. The pedestrian path shall be a minimum of six feet (6') wide and it shall be flanked on either side by a planter of at least five feet (5') in width.
- c. Drive-aisles shall be separated from parking spaces with a landscape planter at the end of each aisle. The planter shall be a minimum width of five feet (5').
- d. Landscaping within parking lots shall meet the following requirements:
  - i. Landscape materials. Landscaping shall be provided throughout the parking lot as a combination of ground cover, shrubs, and trees.
  - ii. Protective curbing. Planting areas shall be bordered by a concrete curb at least six inches (6") high and six inches (6") wide. The designated approving authority may approve an alternative barrier design to protect landscaped areas from damage by vehicles and/or to provide for the infiltration of water runoff from paved surfaces.
  - iii. Adjacent to side or rear property lines. Parking areas for nonresidential uses shall provide a perimeter landscape strip at least eight feet (8') wide (inside dimension) where the parking area adjoins a side or rear property line. The requirement for a landscape strip may be satisfied by a setback or buffer area that is otherwise required. Trees shall be provided at the rate of one for each twenty-five linear feet (25') of landscaped area.
- e. Landscaping within the interior of each outdoor parking area as follows:
  - i. Five percent (5%) of the gross surface area of the parking lot, exclusive of the required perimeter landscaping shall be landscaped.
  - ii. Trees shall be planted throughout the parking area at a minimum ratio of one (1) tree for each six (6) double loaded parking spaces or one (1) tree for each three (3) single-loaded or side-loaded parking spaces.

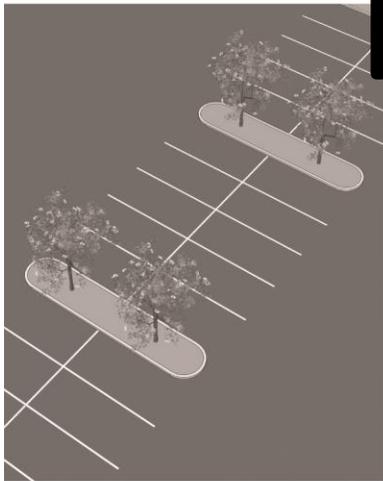
**Figure 9-5D1-2-E2**  
**EXAMPLE PARKING LOT LANDSCAPING**



Planter Median



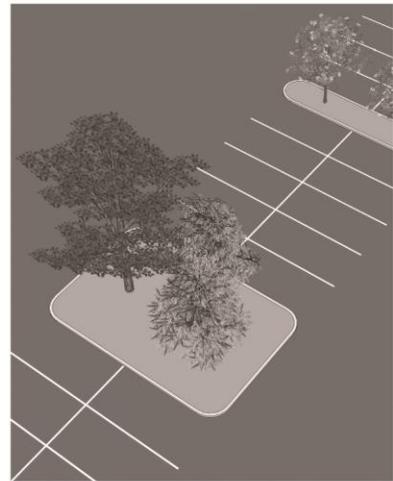
Planter Median with Pedestrian Pathway



Planter Island



Diamond Planter



Incorporate Existing  
Vegetation

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7. **Fueling Stations.** For fueling stations, a minimum of twenty (20%) percent of the lot area shall be landscaped. A minimum of seventy percent (70%) of the landscaped area shall be covered with live landscaping, such as lawn, ground cover, trees, or shrubs, and not more than thirty percent (30%) of the landscape area shall be covered with hardscape, such as gravel, landscaping rock, concrete, artificial materials, or other impervious materials.
8. **Telecommunication Facilities.** Where feasible, facilities shall be installed so as to maintain and enhance existing landscaping on the site, including trees, foliage, and shrubs, whether or not utilized for screening. Additional landscaping shall be planted around the tower and related equipment to buffer abutting residential zoning districts or uses, and to buffer public trails. Specifically, landscaping around the perimeter of the facility (leased area) shall include dense tree and shrub plantings with the necessary irrigation. Trees shall be fast-growing evergreen species, a minimum of twenty-four inch (24") box in size. Shrubs shall be a minimum fifteen (15)

gallon size covering a minimum planter area depth of five feet (5') around the facility. Trees and shrubs shall be planted no farther apart on center than the mature diameter of the proposed species.

9. **On-Site Pedestrian Pathways.** Pedestrian pathway landscaping shall include shade trees placed so as to cover sixty percent (60%) of the total pathway area with tree canopies within fifteen (15) years of securing building permit.
10. **Canals.** To the extent that landscaping or planting is required or provided along creeks, such landscaping shall be native plants.
11. **Public Spaces.** Pedestrian space landscaping shall include a combination of shade trees and pedestrian shading devices (e.g., canopies, awnings, and umbrellas) placed so as to cover sixty percent (60%) of the total space with a shade canopy within fifteen (15) years of securing building permit.
12. **Signs.** Landscaping shall be provided at the base of the supporting structure of freestanding signs equal to twice the area of one face of the sign. For example, fifty (50) square feet of sign area requires one hundred (100) square feet of landscaped area.
13. **Existing Trees.** Existing mature trees on the site in good health shall be preserved whenever possible.

#### F. Removal and Replacement of Landscaping and Trees from Approved Plans

All plant material removed from a project in which the city has approved the landscape plan shall be replaced with the following replacement sizes:

1. Shrubs shall be replaced with five (5) gallon size plants.
2. Ground cover shall be replaced with flats.
3. Trees shall be replaced based upon the schedule described in table 9-5D1-2-F1 (tree replacement schedule). Trees removed or severely and improperly pruned shall be replaced per the schedule.

**TABLE 9-5D1-2-F1 – TREE REPLACEMENT SCHEDULE**

Size of Damaged/Removed Tree (DBH <sup>1</sup> )	Replacement Tree Required
2 inches	15-inch box
4 inches	24 inch box
6 inches or greater	36-inch box

#### Notes

1. Diameter at Breast Height

### 9-5D1-3 Landscape Care and Maintenance

#### A. Irrigation

1. All new single-family and multi-family development, excluding additions and infill development, shall comply with the following requirements.
  - a. Sprinklers and sprays shall not be used in areas less than eight feet (8') wide.

- b. Sprinkler heads with a precipitation rate of .85 inches per hour or less shall be used on slopes exceeding fifteen percent (15%) or on slopes exceeding ten percent (10%) within ten feet (10') of hardscapes to minimize runoff.
  - c. Valves and circuits shall be separated based on water use.
  - d. Drip or bubbler irrigation systems are required for trees. Bubblers shall be used that do not exceed one and one-half (1½) gallons per minute per device.
  - e. Sprinkler heads must have matched precipitation rates within each control valve circuit.
  - f. Check valves are required where elevation differences may cause low head drainage.
  - g. Sprinkler head spacing shall be designed for head-to-head coverage. The system should be designed for minimum runoff and overspray onto nonirrigated areas.
  - h. All irrigation areas shall be equipped with a controller capable of dual or multiple programming. Controllers must have multiple cycle start capacity and a flexible calendar program.
  - i. All irrigation systems shall be equipped with rain shut-off devices.
2. All other development not addressed above, including but not limited to new nonresidential development, mixed-use development, infill development, and additions to existing development, shall comply with the following:
    - a. A low-pressure irrigation system (e.g., drip system) shall be provided for all landscape areas other than turf.
    - b. Automatic programmable controllers with check valves shall be installed in sloping areas with elevation differences of more than five feet (5') as defined from the toe to the top of slope.
    - c. Landscape materials with the same watering needs shall be grouped together and irrigated through separate control valves.
    - d. Irrigation systems shall be designed to avoid runoff, excessive low head drainage, overspray, or other similar conditions where water flows or drifts onto adjacent property, non-irrigated areas, walks, roadways, or structures.
    - e. The annual maintenance program with seasonal watering schedule shall be laminated and permanently posted in or near the control box on-site.

### **B. Maintenance of Required Planting Areas**

Required planting areas shall be permanently maintained by water, clearing debris and litter, weeding, pruning, insect control, and replacement of plant materials and irrigation equipment as needed to preserve the health and appearance of plant materials. All landscaping shall be maintained in such a manner as to not restrict designated pedestrian access. All trees, shrubs, and plants which, due to accident, damage, disease, or other cause, fail to show a healthy growth shall be replaced, in kind, pursuant to the approved landscape plans within thirty (30) days from the identified damage date.

## **9-5D1-4 Tree Preservation**

### **A. Purpose and Applicability**

This section implements the general plan policy of protecting and preserving significant trees within the community. This section includes provisions that preserve existing trees on private property through the

development review process and subsequent activities such as work within the canopy or within the critical root zone of trees and provide a process for replacement in instances where preservation is not reasonably possible. For purposes of this section, “development review process” shall mean the planning review and approval process for new residential or commercial subdivisions, site plan and architectural review, or other discretionary planning permit or entitlement that results in new construction.

The requirements of this section, and corresponding permit requirements as described in section 9-2B-5 (tree permit for trees on private property), shall only apply to the following activities. It shall not apply to trees on public property or within the public right-of-way, which are covered in chapter 7-5 (street trees).

1. Trees proposed for removal as part of a development project; or
2. Trees that were preserved or protected as part of a development project approval or were planted within a development project to satisfy a mitigation requirement.

### **B. Protected Trees**

The following trees shall not be removed without city approval.

1. **Heritage Tree.** As identified in the general plan, the following species of trees with a diameter at breast height of six inches (6") or greater, or multi-trunked trees with a combined diameter at breast height of six inches (6") or greater, are considered heritage trees:
  - a. Valley oak (*Quercus lobata*);
  - b. Magnolia ash (*Magnolia macrophylla* subsp. *ashei*);
  - c. California sycamore (*Platanus racemosa*);
  - d. Cottonwood;
  - e. Modesto ash (*Fraxinus velutina*);
  - f. Italian stone pine (*Pinus pinea*);
  - g. California fan palm (*Washingtonia filifera*); and
  - h. Eucalyptus.
2. **Protected Trees.** Trees that were preserved during the development process, planted as required mitigation, or planted as part of an approved landscape plan are subject to the provisions of this section.

### **C. Work Requiring a Tree Permit for Trees on Private Property**

No person shall conduct work within the critical root zone, cut down, remove, top, or relocate any heritage or protected tree unless a valid tree permit for trees on private property has been approved. Exemptions to this requirement are provided in subsection D below.

### **D. Exemptions from Tree Permit Requirement**

The following types of work are exempt from requiring a tree permit prior to initiation of the work:

1. Work involving heritage trees on undeveloped private property;
2. Removal and pruning work by utility providers for all types of trees; and

3. In case of emergency caused by the tree being in a hazardous or dangerous condition requiring immediate action for the safety of human life or buildings or structures, such tree may be removed by permission of the public works director.

#### **E. Tree Permit for Trees on Private Property Application Processing**

Tree permits for trees on private property shall be processed as provided in chapter 9-2 (procedures and entitlements).

#### **F. Mitigation Required For Removal of Protected Trees on Private Property**

As part of the approval of a tree permit, or other entitlement request related to the removal of a protected tree, mitigation is required. Mitigation may also be required through the CEQA process.

1. **Mitigation Standards.** When tree removal is authorized as part of issuance of a valid tree permit, mitigation for the loss shall be provided as follows:
  - a. New trees of the same species shall be provided at a ratio of one new inch (1") diameter at breast height (dbh) or each one inch (1") dbh lost (1:1 ratio).
  - b. Alternative mitigation may be approved by the city as provided below in subsection 3 below (mitigation requirements equivalents).
  - c. The applicant shall prepare a tree mitigation plan for review and approval by the planning director.
2. **Mitigation Options.** The city allows all of the following mitigation options, subject to review and approval by the planning director, as part of a tree mitigation plan.
  - a. On-site or off-site replacement. The plan shall specify where the tree(s) shall be planted and how the tree(s) shall be monitored and maintained for a minimum of five (5) years. The city may require the establishment of a performance bond or other surety as a way to ensure that the replacement trees survive for the minimum establishment period of ten (10) years.
  - b. On-site or off-site relocation. The tree mitigation plan may include the relocation of trees, include specification regarding where the trees will be moved to, and how the tree will be monitored and maintained for a minimum of ten (10) years. The city may require the establishment of a performance bond or other surety to ensure that the tree becomes well established.

The city will allow the use of on-site trees planted under a mitigation plan as a way to meet any other on-site landscaping requirement, including parking lot shading, street landscaping, and street trees on residential lots.
3. **Mitigation Equivalents.** Trees planted as mitigation shall be of an equivalent species as those being removed. The following equivalent sizes shall be used whenever new trees are planted (either on-site or off-site) under a mitigation plan:
  - a. A 1-gallon container or seedling-sized containerized tree = one inch (1") dbh
  - b. A 15-gallon container = one and one-half inch (1½") dbh
  - c. A 24-inch box = two inch (2") dbh
  - d. A 36-inch box = three inch (3") dbh
  - e. A 60-inch box = three inch (3") dbh

- f. A 72-inch box = four inch (4") dbh
- 4. Replanting Security for Trees Planted as Mitigation**
- a. Any tree mitigation plan shall include a financial guarantee of the applicant's compliance with tree protection and preservation provisions. Security may also be required at the discretion of the approving body to ensure the completion of any additional work specified as a condition of permit approval or other approvals.
  - b. The security shall be in the amount of one hundred percent (100%) of the estimated cost of the required work. The applicant shall include the cost estimate as part of the tree mitigation plan for planning director review and approval. The terms and conditions of the security shall be reviewed and approved by the planning director prior to approval of the tree mitigation plan.
  - c. The security may be in the form of a letter of credit, cash deposit, a combination thereof, or other acceptance method of security by the city and shall be approved by the city attorney.
  - d. Security posted on actual work required shall be maintained for a minimum of five (5) years. The city may require additional length of security of up to ten (10) years when larger trees are being planted and/or site conditions warrant.
  - e. Any interest gained on security posted by requirement of the city shall accrue to the applicant or his or her designee.

## **9-5D1-5 Preferred Plant List**

### **A. Street Trees**

Table 9-5D1-5-A1 lists the city's approved street trees for use in parkways, medians, and other street landscaping (between the sidewalk and a single-family home). The table lists that botanical and common name of each species, the type of tree (evergreen or deciduous), the size, and appropriate planting location (within the parkway and/or between the sidewalk and a single-family home).

**TABLE 9-5D1-5-A1 – STREET TREES**

Botanical Name	Common Name	Type (Evergreen or Deciduous)	Tree Size	Planting Location	
				Parkway	Located minimum 5' from sidewalk on house side
Geijera Purviflora	Australian Willow	Evergreen	20' - 30'	Yes	Yes
Pyrus Calleryana	Bradford Pear	Deciduous	30', 20' spread	No	Yes
Pinus Halepensis Brutia'	Brutia Pine <sup>1</sup>	Evergreen	30'-60' 25' spread	No	Yes
Pinus Canariensis	Canary Island Pine <sup>1</sup>	Evergreen	60' - 80' columnar	No	Yes
Pistacia Chinesis	Chinese Pistache <sup>1</sup>	Deciduous	60', 50' spread	Yes	Yes
Quercus Agrifolia	Coast Live Oak	Evergreen	30' - 70', greater spread	Yes	Yes
Lagerstroemia Indica	Crape Myrtle <sup>1</sup>	Deciduous	6' - 30', equal spread	No	Yes
Pyrus Kawakamii	Evergreen Pear	Deciduous	15'-25', 20'	Yes	Yes
Koelreuteria Paniculata	Golden Rain <sup>1</sup>	Deciduous	20' – 30'	Yes	Yes
Laurus Nobilis	Grecian Laurel	Evergreen	20'-25', 15' spread	Yes	Yes
Quercus Ilex	Holly Oak <sup>1</sup>	Evergreen	40'-70', equal spread	Yes	Yes
Pinus Pinea	Italian Stone Pine	Evergreen	40'-80', equal spread	No	Yes
Ginko Biloba	Maidenhair Tree	Deciduous	35'-50', lesser spread	Yes	Yes
Nyssa Sylvatica	Pepperidge Tupelo	Deciduous	30'-50'	Yes	Yes
Quercus Palustris	Pin Oak	Deciduous	50' +	Yes	Yes
Quercus Rubra	Red Oak	Deciduous	50' +	Yes	Yes
Zelkova Serrata	Sawleaf Zelkova	Deciduous	60', equal spread	Yes	Yes
Fraxinus Uhdei "Majestic Beauty"	Shamel Ash	Deciduous	40'-60', lesser spread	No	Yes
Liquidamber Styraciflua	Sweet Gum	Deciduous	To 60', 20'-25' spread	No	Yes
Quercus Lobata	Valley Oak <sup>1</sup>	Deciduous	60'-80' spread	No	Yes

**Notes**

1. Drought tolerant

**B. Shade Trees**

Table 9-5D1-5-B1 lists the city’s preferred trees for general use throughout the city, including, but not limited to parking lot shade and landscaping trees and other landscaping areas because they are compatible with Lemoore’s climate conditions and high water table. The botanical name, common name, type (deciduous or evergreen), tree size, minimum planter well width, minimum parkway width, and root damage potential.

TABLE 9-5D1-5-B1 – SHADE TREES

Botanical Name	Common Name	Type (Evergreen or Deciduous)	Tree Size	Minimum Planter Well Width	Minimum Parkway Width	Root Damage Potential
Acer buergeranum	Trident Maple	Deciduous	Medium	3' x 3'	3' - 6'	Low
Alnus cordata	Italian Alder	Deciduous	Large	6' x 6'	6' - 8'	Moderate
Brachychiton populeneus	Bottle Tree	Evergreen	Large	6' x 6'	6' - 8'	Moderate
Celtis australis	European Hackberry	Deciduous	Large	6' x 6'	6' - 8'	Moderate
Celtis occidentalis	Common Hackberry	Deciduous	Large	6' x 6'	6' - 8'	Moderate
Celtis sinensis	Chinese Hackberry	Deciduous	Large	6' x 6'	6' - 8'	Moderate
Cercis canadensis	Eastern Redbud	Deciduous	Small	3' x 3'	2' - 4'	Low
Cercis canadensis 'Oklahoma'	Oklahoma Eastern Redbud	Deciduous	Small	3' x 3'	2' - 4'	Low
Cercis mexicana	Mexicana Redbud	Deciduous	Small	3' x 3'	2' - 4'	Low
Cercis reniformis 'Texas White' or 'Village Green'	Texas White Redbud	Deciduous	Small	3' x 3'	2' - 4'	Low
Cinnamomum camphora	Camphor	Evergreen	Large	N/A	8' +	High
Fraxinus americana 'Autumn Purple'	Autumn Purple Ash	Deciduous	Large	5' x 5'	6' - 8'	High
Fraxinus americana 'Rose hill'	Rose hill Ash	Deciduous	Large	5' x 5'	6' - 8'	Moderate
Fraxinus excelsior 'Hessei'	Hessei Ash / European Ash	Deciduous	Large	5' x 5'	6' - 8'	Moderate
Ginkgo biloba 'Autumn Gold'	Autumn Gold Ginkgo	Deciduous	Large	4.5' x 4.5'	4' - 6'	Moderate
Ginkgo biloba 'Princeton Sentry'	Princeton Sentry Ginkgo	Deciduous	Medium	4.5' x 4.5'	4' - 6'	Low
Ginkgo biloba 'Saratoga'	Saratoga Ginkgo	Deciduous	Large	4.5' x 4.5'	4' - 6'	NA
Ginkgo biloba 'Shangri-la'	Shangri-la' Ginkgo	Deciduous	Large	4.5' x 4.5'	4' - 6'	NA
Koelreuteria paniculata	Goldenrain	Deciduous	Medium	4.5' x 4.5'	4' - 6'	Low

TABLE 9-5D1-5-B1 – SHADE TREES

Botanical Name	Common Name	Type (Evergreen or Deciduous)	Tree Size	Minimum Planter Well Width	Minimum Parkway Width	Root Damage Potential
Lagerstroemia indica	Crape Myrtle	Deciduous	Small	3' x 3'	3' - 6'	Low
Laurus nobilis 'Saratoga'	Laural Saratoga	Evergreen	Medium	3' x 3'	3' - 6'	Moderate
Liriodendron tulipifera	Tulip Tree	Deciduous	Large	6' x 6'	6' - 8'	Moderate
Liriodendron tulipifera	Tulip Tree	Deciduous	Large	4.5' x 4.5'	6' - 8'	Moderate
Magnolia 'Elizabeth'	Elizabeth Magnolia	Evergreen	Medium	3' x 3'	3' - 6'	Low
Magnolia 'Galaxy'	Galaxy Magnolia	Deciduous	Medium	3' x 3'	3' - 6'	Low
Magnolia grandiflora	Southern Magnolia	Evergreen	Large	5' x 5'	4' - 6'	High
Magnolia 'Rustica Rubran'	Rustica Rubran Magnolia	Deciduous	Small	3' x 3'	3' - 6'	Low
Magnolia 'Sammeul Summers'	Sammeul Summers Magnolia	Evergreen	Small	3' x 3'	3' - 6'	Moderate
Magnolia 'St. Mary's'	Saint Mary's Magnolia	Evergreen	Medium	3' x 3'	3' - 6'	Low
Pistacia chinensis	Chinese Pistache	Deciduous	Medium	4.5' x 4.5'	4' - 6'	Low
Pyrus calleryana 'faueriei'	Fauer Pear	Deciduous	Large	3' x 3'	3' - 6'	Low
Pyrus kawakamii	Evergreen Pear	Deciduous	Medium	4.5' x 4.5'	4' - 6'	Low
Quercus agrifolia	Coastal Live Oak	Evergreen	Large	5' x 5'	6' - 8'	Moderate / High
Quercus chrysolepis	Canyon Live Oak	Evergreen	Large	5' x 5'	6' - 8'	Moderate
Quercus lobata	Valley Oak	Deciduous	Large	5' x 5'	6' - 8'	mo
Quercus muehlenbergii	Chinkapin Oak	Deciduous	Large	5' x 5'	6' - 8'	Low
Quercus nigra	Water Oak	Deciduous	Large	5' x 5'	6' - 8'	Low
Quercus phellos	Willow Oak	Deciduous	Large	5' x 5'	6' - 8'	Moderate
Quercus rubra	Red Oak	Deciduous	Large	5' x 5'	6' - 8'	Moderate
Quercus shumardii	Shumard Oak	Deciduous	Large	5' x 5'	6' - 8'	Moderate
Quercus suber	Cork Oak	Evergreen	Large	5' x 5'	6' - 8'	Moderate
Quercus virginiana	Southern Live Oak	Evergreen / Part Deciduous	Large	5' x 5'	6' - 8'	Moderate
Quercus wislizenii	Interior Live Oak	Evergreen	Large	5' x 5'	6' - 8'	Moderate

**TABLE 9-5D1-5-B1 – SHADE TREES**

Botanical Name	Common Name	Type (Evergreen or Deciduous)	Tree Size	Minimum Planter Well Width	Minimum Parkway Width	Root Damage Potential
Sapium sebiferum	Chinese Tallow Tree	Deciduous	Medium	4.5' x 4.5'	4' - 6'	Low
Tilia cordata 'Greenspire'	Little-Leaf Linden	Deciduous	Large	4.5' x 4.5'	4' - 6'	Moderate
Ulmus parvifolia 'Drake' or 'True Green'	Evergreen Elm	Evergreen To Partially Deciduous	Large	5' x 5'	6' - 8'	Moderate
Zelkova serrata 'Green Vase'	Green Vase Zelkova	Deciduous	Large	6' x 6'	6' - 8'	Low
Zelkova serrata 'Musashino'	Musashino Zelkova	Deciduous	Large	6' x 6'	6' - 8'	Moderate
Zelkova serrata 'Village Green'	Village Green Zelkova	Deciduous	Large	6' x 6'	6' - 8'	Low

**Notes**

1. Not all trees are suitable as street trees, unless grown as 'standard' form, and are grown to sufficient canopy height.
2. Verify availability and suitability to micro-climate prior to specifying or selecting trees.
3. Because of known high salinity content in city of Lemoore, it is recommended that soil testing be conducted prior to planting to ensure soils suitability.
4. It is recommended to conduct percolation test prior to planting to ensure that tree planting well drains at min. rate of 1 inch per hour.
5. Lagerstromia spp. Is particularly sensitive to high salinity, pistacia spp. Is moderately sensitive

**C. Shrubs**

Table 9-5D1-5-C1 lists the city’s preferred shrubs for general use throughout the city, including, but not limited to, within medians and parkways, parking lots,, and other landscaping areas. The botanical name and common name for each is listed.

**TABLE 9-5D1-5-C1 – PREFERRED SHRUBS**

Botanical Name	Common Name
Abelia grandiflora	Glossy abelia
Arbutus unedo	Strawberry Tree
Acacia Cyclops	Acacia
Acacia farnesiana	Green Wattle
Acacia longifolia	Sydney Golden Wattle
Acacia podalyriaefolia	Pearl Acacia
Callistemon lanciolatus	Lemon Bottlebrush
Callistemon viminalis	Weeping Bottlebrush
Ceanothus	Sierra Blue Wild Lilac
Cercis Canadensis	Ruby Atkinson Eastern Redbud
Cercis Canadensis	Plena Eastern Redbud
Cercis Canadensis	Alba Eastern Redbud

**TABLE 9-5D1-5-C1 – PREFERRED SHRUBS**

Botanical Name	Common Name
<i>Cercis Canadensis</i>	Forest Pansy Eastern Redbud
<i>Cercis Canadensis</i>	Oklahoma Eastern Redbud
<i>Cercis chinensis</i>	Chinese Redbud
<i>Cercis occidentalis</i>	Western Redbud
<i>Cercis reniformis</i>	Alba Southwest Redbud
<i>Cocculus laurifolius</i>	Snailseed
<i>Cotoneaster franchetii</i>	English Laurel
<i>Cotoneaster henryana</i>	Cotoneaster
<i>Cotoneaster lacteal</i>	Parney Cotoneaster
<i>Cotoneaster salicifolia</i>	Willowleaf Cotoneaster
<i>Cytisus canariensis</i>	Canary Island Broom
<i>Cytisus racemosus</i> ( <i>Genista racemosa</i> )	Broom
<i>Elaeagnus commutate</i>	Coral Silver Silverberry
<i>Elaeagnus pungens</i> Fruitlandii	Silverberry
<i>Elaeagnus pungens</i> Maculata	Silverberry
<i>Elaeagnus pungens</i> Marginata	Silverberry
<i>Elaeagnus pungens</i> Variegata	Silverberry
<i>Escallonia monterridensis</i>	White Escallonia
<i>Escallonia exoniensis</i> Balfouri	Hybrid Escallonia
<i>Escallonia exoniensis</i> Fradesi	Hybrid Escallonia
<i>Escallonia exoniensis</i> Ingramii	Hybrid Escallonia
<i>Escallonia exoniensis</i> Jubilee	Hybrid Escallonia
<i>Escallonia laevis</i>	Pink Escallonia
<i>Escallonia rosea</i>	Rose Escallonia
<i>Escallonia rubra</i>	Escallonia
<i>Euonymus japonica</i> Albo-Marginata	Evergreen Euonymus
<i>Euonymus japonica</i> Aureo-marginata	Evergreen Euonymus
<i>Euonymus japonica</i> Aureo-variegata	Evergreen Euonymus
<i>Euonymus japonica</i> Grandifolia	Evergreen Euonymus
<i>Euonymus japonica</i> Silver King	Evergreen Euonymus
<i>Euonymus japonica</i> Silver Queen	Evergreen Euonymus
<i>Euonymus kiautschovica</i>	<i>E. patens</i>
<i>Feijoa sellowiana</i>	Pineapple Guava
<i>Grevillea banksii</i>	Grevillea
<i>Grevillea banksii</i> Canberra	Grevillea
<i>Grevillea banksii</i> Constance	Grevillea
<i>Grevillea banksii</i> Pink Pearl	Grevillea
<i>Grewia caffra</i>	Lavender Starflower
<i>Ilex altaclarensis</i> Wilsonii	Wilson Holly
<i>Ilex aquifolium</i>	English Holly
<i>Ilex aquifolium</i>	variegated variety Holly
<i>Ilex cornuta</i> Burfordii	Holly
<i>Ilex aquipernyi</i> Brilliant	Holly
<i>Ilex latifolia</i> Nellie Stevens	Holly

**TABLE 9-5D1-5-C1 – PREFERRED SHRUBS**

Botanical Name	Common Name
<i>Ilex ilicifolia</i>	Holly Leaf Sweet spire
<i>Juniperus</i> varieties	Junipers
<i>Ligustrum japonicum</i> (L. Texanum)	Japanese Privet
<i>Myoporum laetum</i> Carsonii	Myoporum
<i>Myrtus communis</i>	Myrtle
<i>Osmanthus fragrans</i>	Sweet Olive
<i>Photinia arbutifolia</i>	Photinia
<i>Photinia fraseri</i>	Photinia
<i>Photinia globra</i>	Photinia
<i>Photinia serrulata</i>	Chinese Photinia
<i>Pittosporum crassifolium</i>	Mock Orange
<i>Pittosporum eugenioides</i>	Mock Orange
<i>Pittosporum tenuifolium</i>	Mock Orange
<i>Pittosporum tobira</i>	Tobira
<i>Prunus caroliniana</i> Bright and Tight	Carolina Cherry
<i>Prunus ilicifolia</i>	Holly Leaf Cherry
<i>Prunus laurocerasus</i>	English Laurel
<i>Prunus lusitanica</i>	Portugal Laurel
<i>Pyracantha coccina</i>	Pyracantha
<i>Pyracantha koidzumii</i> (p. formosa)	Pyracantha
<i>Rhamnus alaternus</i>	Italian Buckthorn
<i>Syringa vulgaris</i>	Common Lilac
<i>Viburnum japonicum</i>	Laurustinus
<i>Viburnum odoratissimum</i>	Sweet Viburnum
<i>Viburnum suspensum</i>	Laurustinus
<i>Viburnum tinus</i> Robustum	Laurustinus
<i>Xylosma congestum</i>	Shiny Xylosma

#### D. Vines

Table 9-5D1-5-C1 lists the city's preferred vines for general use throughout the city, including, but not limited to, within medians and parkways, parking lots, and other landscaping areas. The botanical name and common name for each is listed.

**TABLE 9-5D1-5-D1 – PREFERRED VINES**

Botanical Name	Common Name
<i>Clematis</i> Sp.	Evergreen and deciduous varieties
<i>Clytostoma callistegioides</i>	Lavender Trumpet
<i>Ficus repens</i>	Creeping Fig
<i>Gelsemium sempervirens</i>	Carolina jessamine
<i>Jasminum mesnyi</i>	Primrose Jasmine
<i>Parthenocissus tricuspidata</i>	Boston Ivy
<i>Passiflora edulis</i>	Passion Fruit
<i>Trachelospermum asiaticum</i>	Asian jasmine
<i>Trachelospermum jasminoides</i>	Star jasmine

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## Chapter 5: Site, Development, and Operational Standards

### Article D2: Landscape Water Reporting Requirements

#### Sections:

- 9-5D2-1 Purpose
- 9-5D2-2 Applicability
- 9-5D2-3 Reporting Requirements

#### **Draft Zoning Code Changes:**

- *The existing requirements of section 7-7A-8.2 (Water Efficient Landscape Ordinance Adopted) have been brought into the Zoning Code.*
- *The State mandated water efficiency ordinance, which establishes reporting and design requirements for landscape areas has been incorporated into the text.*

#### **9-5D2-1 Purpose**

The purpose of this article is to adopt, by reference, the state of California model water efficient landscape ordinance (herein after the “model ordinance”). This ordinance establishes specific reporting requirements for water usage of landscape areas in public and private development. As provided in the Water Conservation in Landscaping Act of 2006 (Assembly Bill 1881, Laird), all cities and counties in California are required to adopt the model ordinance.

#### **9-5D2-2 Applicability**

As provided in the state model ordinance, the requirements of this article and the model ordinance shall be imposed as follows:

1. After January 1, 2010, this article shall apply to all of the following landscape projects:
  - a. New construction and rehabilitated landscapes for public agency projects and private development projects with a landscape area equal to or greater than two thousand five hundred (2,500) square feet requiring a building or landscape permit, plan check, or site plan and architectural review.
  - b. New construction and rehabilitated landscapes which are developer-installed in single-family and multi-family projects with a landscape area equal to or greater than two thousand five hundred (2,500) square feet requiring a building or landscape permit, plan check, or site plan and architectural review.
  - c. New construction landscapes which are homeowner-provided and/or homeowner-hired in single-family and multi-family residential projects with a total project landscape area equal to or greater than five thousand (5,000) square feet requiring a building or landscape permit, plan check, or site plan and architectural review.
  - d. Existing landscapes limited to those identified in sections 493, 493.1, and 493.2 of the model ordinance.

- e. Cemeteries. Recognizing the special landscape management needs of cemeteries, new and rehabilitated cemeteries are limited to those identified in sections 492.4, 492.11, and 492.12 of the model ordinance; and existing cemeteries are limited to sections 493, 493.1, and 493.2 of the model ordinance.
2. This article does not apply to:
  - a. Registered local, state, or federal historical sites.
  - b. Ecological restoration projects that do not require a permanent irrigation system.
  - c. Mined-land reclamation projects that do not require a permanent irrigation system.
  - d. Plant collections as part of botanical gardens and arboretums open to the public.

### **9-5D2-3 Reporting Requirements**

Unless exempt from the requirements of this article and the model ordinance, all landscape plans shall address the submittal requirements and standards outlined below and provided in the model ordinance.

#### **A. Landscape Documentation Package**

The landscape documentation package shall include, at a minimum, the following components:

1. Project information as described in the forms available from the planning department
2. Water-efficient landscape worksheet, as provided by the planning department, including hydrozone information table and water budget calculations including the following information as further described in this article:
  - a. Maximum applied water allowance (MAWA);
  - b. Estimated total water use (ETWU);
  - c. Soil management report;
  - d. Landscape design plan;
  - e. Irrigation design plan; and
  - f. Grading design plan
3. Certificate of completion, as provided by the planning department, including scheduling parameters used to set the irrigation controller, landscape and irrigation maintenance schedule and irrigation audit report.

#### **B. Water Budget Calculations**

The water budget calculations included in the landscape documentation package shall adhere to the following requirements:

1. The plant factor used shall be from the Water Use Classification of Landscape Species (WUCOLS) published by the University of California Cooperative Extension, the Department of Water Resources, and the Bureau of Reclamation (2000). The plant factor ranges from zero (0.0) to three tenths (0.3) for low-water-use plants, from four tenths (0.4) to six tenths (0.6) for moderate-water-use plants, and from seven tenths (0.7) to one (1.0) for high-water-use plants.
2. All water features shall be included in the high-water-use hydrozone and temporarily irrigated areas shall be included in the low-water-use hydrozone.

3. All special landscape areas shall be identified and their water use calculated as described below.
4. ETAF for special landscape areas shall not exceed one (1.0).
5. Maximum applied water allowance. The maximum applied water allowance shall be calculated using the equation  $MAWA = (ETo) (0.62) [(0.7 \times LA) + (0.3 \times SLA)]$ , where:
  - a. MAWA = maximum applied water allowance (gallons per year)
  - b. ETo = reference evapotranspiration (inches per year) (see section H, Reference Evapotranspiration (ETo) Table)
  - c. 0.62 = conversion factor (to gallons)
  - d. 0.7 = ET adjustment factor (ETAF)
  - e. LA = landscape area including SLA (square feet)
  - f. 0.3 = additional water allowance for SLA
  - g. SLA = special landscape area (square feet)
6. Estimated total water use. The estimated total water use shall be calculated using the equation

$$ETWU = (ETo)(0.62) \left( \frac{PF \times HA}{IE} + SLA \right)$$

The sum of the estimated total water use calculated for all hydrozones shall not exceed MAWA. The symbols in the equation shall mean:

- a. ETWU = estimated total water use per year (gallons)
- b. ETo = reference evapotranspiration (inches) (see section H, Reference Evapotranspiration (ETo) Table)
- c. PF = plant factor from WUCOLS
- d. HA = hydrozone area [high, medium, and low water use areas] (square feet)
- e. SLA = special landscape area (square feet)
- f. 0.62 = conversion factor
- g. IE = irrigation efficiency (minimum 0.71)

### C. Soil Management Report

In order to reduce runoff and encourage healthy plant growth, a soil management report shall be completed by the project applicant, or his/her designee. The report shall contain the following information:

1. Submit soil samples to the laboratory for analysis and recommendations.
  - a. Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.
  - b. Soil analysis shall include:
    - i. Soil texture;
    - ii. Infiltration rate determined by laboratory test or soil infiltration rate table;

- iii. pH;
  - iv. Total soluble salts;
  - v. Sodium;
  - vi. Percent organic matter; and
  - vii. Recommendations.
2. The project applicant, or his/her designee, shall comply with one of the following:
    - a. If significant mass grading is not planned, the soil analysis report shall be submitted to the planning department as part of the landscape documentation package; or
    - b. If significant mass grading is planned, the soil analysis report shall be submitted to the city as part of the certificate of completion.
  3. The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans to make any necessary adjustments to the design plans.
  4. The project applicant, or his/her designee, shall submit documentation verifying implementation of soil analysis report recommendations to the city with certificate of completion

#### **D. Landscape Design Plan**

The content and form of the landscape design plan shall meet the landscape design requirements provided in article 9-5D1 and the following submittal requirements as provided in the model ordinance:

1. Delineate and label each hydrozone by number, letter, or other method.
2. Identify each hydrozone as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscape shall be included in the low-water-use hydrozone for the water budget calculation.
3. Identify recreational areas.
4. Identify areas permanently and solely dedicated to edible plants.
5. Identify areas irrigated with recycled water.
6. Identify type of mulch and application depth.
7. Identify soil amendments, type, and quantity.
8. Identify type and surface area of water features.
9. Identify hardscapes (pervious and non-pervious).
10. Identify location and installation details of any applicable stormwater best management practices that encourage on-site retention and infiltration of stormwater. Stormwater best management practices are encouraged in the landscape design plan and examples include, but are not limited to:
  - a. Infiltration beds, swales, and basins that allow water to collect and soak into the ground;

- b. Constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants; and
  - c. Pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete) that minimize runoff.
11. Identify any applicable rain harvesting or catchment technologies (e.g., rain gardens, cisterns).
  12. Contain the following statement: "I have complied with the provisions of the city landscape water conservation regulations and applied them for the efficient use of water in the landscape design plan."
  13. Bear the signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape.

#### **E. Irrigation Design Plan**

An irrigation design plan shall accompany the landscape design plan. The irrigation design plan shall meet the landscape design requirements provided in article 9-5D1 and the following submittal requirements as provided in the model ordinance:

1. **System Requirements.** For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturers' recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the landscape documentation package.
  - a. Dedicated landscape water meters are highly recommended on landscape areas smaller than five thousand (5,000) square feet to facilitate water management.
  - b. Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data shall be required for irrigation scheduling in all irrigation systems.
  - c. The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
    - i. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices shall be installed to meet the required dynamic pressure of the irrigation system.
    - ii. Static water pressure, dynamic or operating pressure, and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.
  - d. Sensors (rain, freeze, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather or during rain.
  - e. Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required, as close as possible to the point of connection of the water supply, to

minimize water loss in case of an emergency (such as a main line break) or routine repair.

- f. Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system. A project applicant shall refer to the applicable local agency code (i.e., public health) for additional backflow prevention requirements.
- g. High flow sensors that detect and report high flow conditions created by system damage or malfunction are recommended.
- h. The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, nonirrigated areas, hardscapes, roadways, or structures.
- i. Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.
- j. The design of the irrigation system shall conform to the hydrozones of the landscape design plan.
- k. The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria regarding the maximum applied water allowance.
- l. It is highly recommended that the project applicant or local agency inquire with the local water purveyor about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.
- m. In mulched planting areas, the use of low-volume irrigation is required to maximize water infiltration into the root zone.
- n. Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.
- o. Head-to-head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
- p. Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to high traffic areas.
- q. Check valves or anti-drain valves are required for all irrigation systems.
- r. Narrow or irregularly shaped areas, including turf, less than eight feet (8') in width in any direction shall be irrigated with subsurface irrigation or low-volume irrigation system.
- s. Overhead irrigation shall not be permitted within twenty-four inches (24") of any nonpermeable surface. Allowable irrigation within the setback from nonpermeable surfaces may include drip, drip line, or other low-flow non-spray technology. The setback area may be planted or unplanted. The surfacing of the setback may be mulch, gravel, or other porous material. These restrictions may be modified if:
  - i. The landscape area is adjacent to permeable surfacing and no runoff occurs; or
  - ii. The adjacent nonpermeable surfaces are designed and constructed to drain entirely to landscaping.

- t. The irrigation designer specifies an alternative design or technology, as part of the landscape documentation package and clearly demonstrates strict adherence to irrigation system design criteria to prevent overspray and runoff.
- u. Slopes greater than twenty-five percent (25%) shall not be irrigated with an irrigation system with a precipitation rate exceeding three-quarters of an inch (3/4") per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology, as part of the landscape documentation package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during the irrigation audit.

## **2. Hydrozone Requirements**

- a. Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.
- b. Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.
- c. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf.
- d. Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:
  - i. Plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or
  - ii. The plant factor of the higher water using plant is used for calculations.
- e. Individual hydrozones that mix high- and low-water-use plants shall not be permitted.
- f. On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the hydrozone information table. This table can also assist with the irrigation audit and programming the controller.

## **3. Design Plan Contents.** The irrigation design plan, at a minimum, shall contain:

- a. Location and size of separate water meters for landscape;
- b. Location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices;
- c. Static water pressure at the point of connection to the public water supply;
- d. Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;
- e. Recycled water irrigation systems;
- f. The following statement: "I have complied with the provisions of the city landscape water conservation regulations and applied them accordingly for the efficient use of water in the irrigation design plan"; and

- g. The signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized to design an irrigation system.

#### **F. Grading Design Plan**

For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the landscape documentation package. A comprehensive grading plan prepared by a civil engineer for other local agency permits satisfies this requirement.

1. The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including:
  - a. Height of graded slopes;
  - b. Drainage patterns;
  - c. Pad elevations;
  - d. Finish grade; and
  - e. Stormwater retention improvements, if applicable.
2. To prevent excessive erosion and runoff, it is highly recommended that project applicants:
  - a. Grade so that all irrigation and normal rainfall remains within property lines and does not drain onto nonpermeable hardscapes;
  - b. Avoid disruption of natural drainage patterns and undisturbed soil; and
  - c. Avoid soil compaction in landscape areas.
3. The grading design plan shall contain the following statement: "I have complied with the provisions of the city landscape water conservation regulations and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of a licensed professional as authorized by law.

#### **G. Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis**

1. For new construction and rehabilitated landscape projects installed after the effective date of this article:
  - a. The project applicant shall submit an irrigation audit report with the certificate of completion to the planning director that may include, but is not limited to, inspection, system tune-up, system test with distribution uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule;
  - b. The city shall administer programs that may include, but not be limited to, irrigation water use analysis, irrigation audits, and irrigation surveys for compliance with the maximum applied water allowance.
2. All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.

#### **H. Reference Evapotranspiration (ET<sub>o</sub>) Table**

Table 9-5D2-3-H1 describes the adopted reference evapotranspiration values for use in calculating water efficiency as required by this article.

**TABLE 9-5D2-3-H1– REFERENCE EVAPOTRANSPIRATION (ET<sub>o</sub>) TABLE**

Month	ET <sub>o</sub> Value
January	0.9
February	1.5
March	3.4
April	5.0
May	6.6
June	7.7
July	3
August	7.3
September	5.4
October	3.4
November	1.4
December	0.7
Annual	51.7

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