3. PARKING LOT SHADE TREE AND CALCULATION LISTS

A. Introduction

The attached lists are recommended for use in designing shade tree coverage for parking lots in compliance with Chapter 17.33 of the Zoning Ordinance (Landscaping Standards). You may also refer to the *El Dorado County Drought Resistant Plant List* which is customized for planting success in the foothills of El Dorado County where there are particular microclimates and soil conditions.

General Plan Policy 7.3.5.1 requires commercial development to utilize drought tolerant plant species in landscaping, where feasible. Exotic or introduced plant species not indigenous to or consistent with the plant community in which proposed development is located is discouraged.

B. Exceptions to the lists.

The following shade tree lists may be expanded by a horticulturalist, landscape architect, or arborist certified by the International Society of Arboriculture (ISA) upon submittal of documentation on the appropriateness of the tree based on its adaptability to the El Dorado County climate, its drought tolerance, normal growth characteristics, and the estimated crown size after 15 years of maturity. The Director will consider this information and may add the tree(s) to the list if it satisfies local criteria.

C. Using the lists.

As used in the following lists, "Upper Elevations" means the elevation above 1,800 feet, which generally encompasses the areas east of Greenwood, Garden Valley, Kelsey, and Placerville. In most situations trees and shrubs so denoted will become stressed as they mature at lower elevations and their water needs will increase significantly. Should they be used at lower elevations, they do best when planted in fill-dirt areas and protected from hot wind and radiant heat. Their sensitivity to radiant heat should strongly discourage anyone from planting them in paved parking lots at the lower elevations.

The following shade tree lists are grouped according to their growth potential at 15 years maturity. Their shade estimates at maturity are shown in square feet based on their percent of tree canopy that will cover the parking lot. To figure the total shade area proposed in a landscape plan, see Section E, (Using Figure 1).

D. TREE LISTS. Based on shade potential at tree maturity:

1. **30 to 35 Foot Diameter-Growth Trees:**

100 percent (interior placement)	= 962 square feet
50 percent (south, east, and west elevations)	= 481 square feet
25 percent (north elevation and corner placement)	= 240 square feet

BOTANICAL NAME	COMMON NAME
Acer platanoides[2]	Norway maple
Acer platanoides[2] 'Crimson King'	purple-leafed Norway maple
Acer macropyyllum[1,2] **(upper elevations)**	bigleaf maple
Calocedrns decurrens[1] **(upper elevations)**	incense cedar
Cedrus atlantica	Atlas cedar
Cedrus deodara **(top choice for non-native conifer)**	deodar cedar
Cupressus ariizonica	Arizona cypress
Fraxinus latifolia[1]	Oregon ash
Melia azedarach	chinaberry
Pistacia chinensis **(top choice for non-native deciduous tree)**	Chinese pistache
Platanus acerifolia[3]	European sycamore/London plane tree
Pseudotsuga menziesii[1] **(upper elevations)**	Douglas fir
Quercus chrysolepis[1] **(upper elevations)**	canyon live oak
Quercus douglasii[1]	blue oak
Quercus ilex	holly oak
Quercus kelloggii[1]	California black oak
Quercus lobata[1] **(top choice for native deciduous tree)**	California valley oak
Quercus suber	cork oak
Quercus \vislizenii[1]	interior live oak
Sequoiadendron giganteum **(upper elevations)**	giant sequoia
Umbellularia californica[1]	California laurel

NOTES:

[1] Indigenous to and grows naturally in El Dorado County.

[2] Impacts to infrastructure and hardscape from this tree species should be considered when siting due to invasive root systems that may cause upheaval and cracking.

[3] This species is not drought resistant in the El Dorado County environment and will require supplemental water throughout its lifespan

2. <u>25 to 30 Foot Diameter-Growth Trees:</u>

100 percent (interior placement) = 707 square feet
50 percent (south, east, and west elevations) = 354 square feet
25 percent (north elevation and corner placement) = 240 square feet

Acer macrophyllum[1, 2]	bigleaf maple
Aesculus californica[1]	California buckeye
Fraxinus oxycarpa "Raywood"	Raywood ash
Liquidambar styraciflua[2]	American sweet gum (liquid amber)
Olea euroapea	olive (fruitless varieties available)

3. <u>20-25 Foot Diameter-Growth Trees:</u>

100 percent (interior placement) = 491 square feet
50 percent (south, east, and west elevations) = 246 square feet
25 percent (north elevation and corner placement) = 123 square feet

Aesculus californica[1]	California buckeye
Koelreuteria paniculata	goldenrain tree

4. <u>15-20 Foot Diameter-Growth Trees:</u>

100 percent (interior placement) = 314 square feet
50 percent (south, east, and west elevations) = 157 square feet
25 percent (north elevation and corner placement) = 79 square feet

Arbutus unedo	strawberry tree
Cercis occidentalis[1]	western redbud
Cornus nuttalli[1]	western flowering dogwood
Ficus carica	edible fig
Laburnum anagyroides	goldenchain tree
Lagerstroemia indica	crepe myrtle
Prunus cerasifera 'Krauter Vesuvius'	purple-leaf flowering plum
Pyrus communis	European pear

<u>NOTES</u>: [1] Indigenous to and grows naturally in El Dorado County.
[2] Impacts to infrastructure and hardscape from this tree species should be considered when siting due to invasive root systems that may cause upheaval and cracking .
[3] This species is not drought resistant in the El Dorado County environment and will require supplemental water throughout its lifespan

E. Using Figure 1. Figure 1, to follow, is intended to reflect the manner in which shade is credited under various conditions and is not an illustration of 50 percent shade coverage. In addition, it only reflects the shade potential produced by trees listed under the 30-35 foot diameter-growth potential. Better placement and/or more trees will be necessary to conform to shade requirements when trees with smaller diameter-growth potential are utilized in a parking lot landscape design.

1. If the site has two or more unconnected parking lots, shade shall be calculated separately for each lot. If multiple parking lots are connected by an adjoining drive, they shall be calculated as one lot.

2. Shade is determined by using the appropriate percentage of the tree's crown based on its planting location within the lot, as demonstrated in Figure 1. The percentage can then be translated into square feet according to the criteria under the applicable tree diameter-growth list. A determination of compliance with Section 17.33.050.C (Parking Lot Landscaping) can be made by the following process:

    a. Calculate the total shade area required (in sq ft) by multiplying the square footage of the paved parking lot area(s) by 0.5;

    b. Select trees from the approved Tree Lists for placement in the landscaping plan.

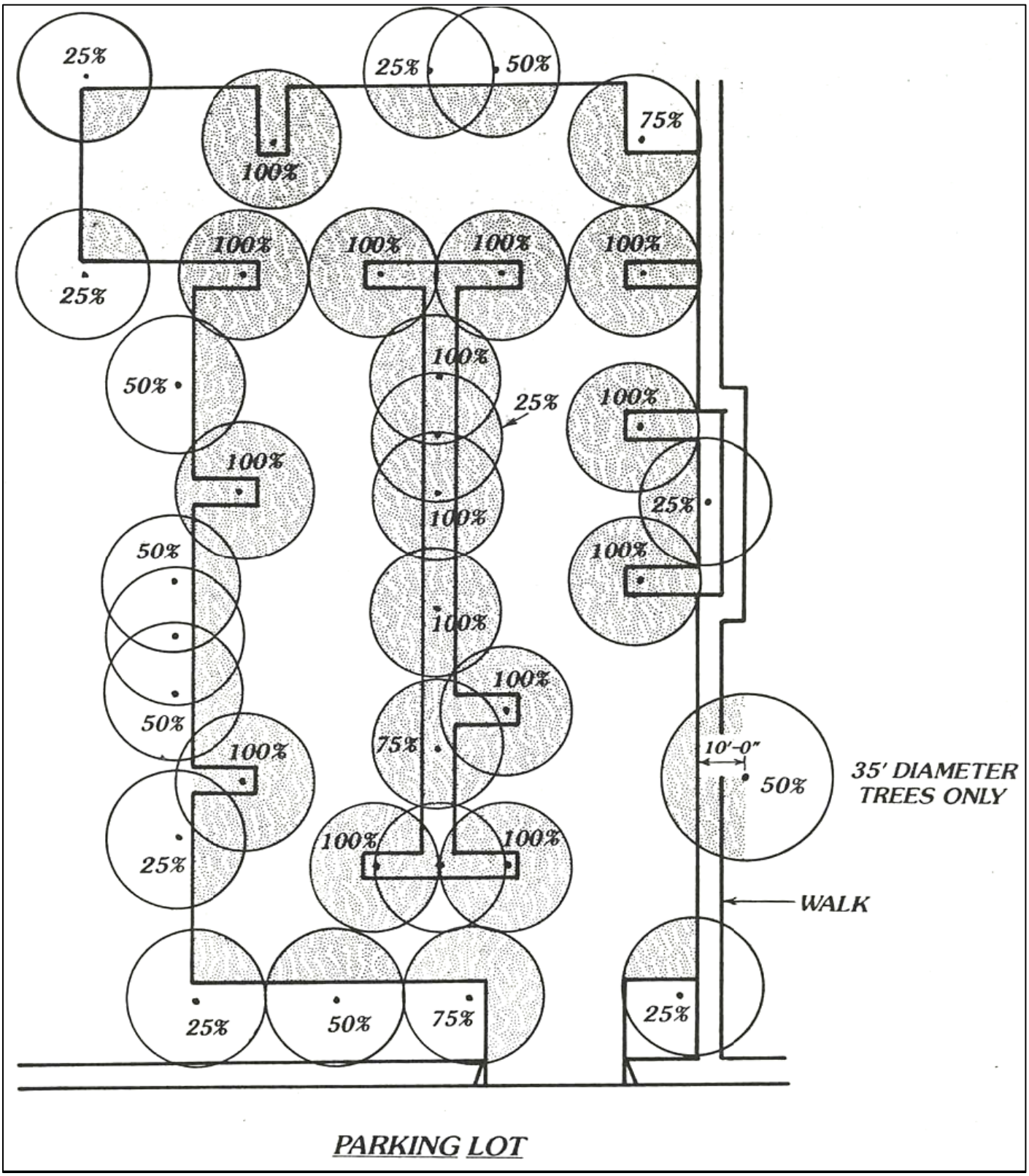
    c. Mark each tree in the landscaping plan with the following ratings based on the percent of coverage that will be provided due to its planting location (shade overlap is not counted twice):

        (1) F for 100 percent
        (2) TQ for 75 percent
        (3) H for 50 percent
        (4) Q for 25 percent

3 Calculate the shade provided from each tree by translating the percentage rating into square feet using the appropriate diameter-growth tree list square footage criteria in Section D (Tree Lists).

4. Total the amount of square footage provided and compare it to the total square footage required under Paragraph 2.a above. The amount should be equal to or greater than the required amount of parking lot shade coverage.

FIGURE 1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