



CITY OF PLEASANTON SHADE TREE GUIDELINES FOR COMMERCIAL PROPERTIES

I. INTRODUCTION / PURPOSE:

This document outlines the City of Pleasanton's Shade Tree Guidelines for calculating shade trees for commercial developments as defined in California Green Building Code Section 5.106.12.

The purpose of the Shade Tree Guidelines is to simplify how to meet the new requirements of:

- A. Over 50 percent shade over the surface parking area within 15 years (Section 5.106.12.1)
- B. Over 20 percent shade over the landscape area within 15 years (Section 5.106.12.2)
- C. Over 20 percent shade over the hardscape area within 15 years (Section 5.106.12.3)

The Guidelines apply to commercial developments only (per California Green Building Code).

II. SHADE REQUIREMENTS AND CALCULATIONS:

The calculations for shade trees apply as follows:

- A. Surface Parking Areas:
 - i. Parking stalls
 - ii. Driveways
 - iii. All drives aisles within the property line
 - iv. All maneuvering areas for vehicles
- B. Landscape Areas:
 - i. All areas that are not hardscape including, but not limited to, lawn, groundcover, shrub, mulch, and dirt areas.
- C. Hardscape Areas:
 - i. Impervious pavement not for vehicular travel
 - ii. Pervious pavement not for vehicular travel
 - iii. Furnishings, sculptures, etc. on concrete pads

Exceptions to the shade requirements include:

- A. Parking structures
- B. Buildings
- C. Truck loading areas in front of overhead doors
- D. Truck maneuvering and truck parking areas unconnected to and exclusive of any vehicle parking
- E. Parking areas in garages

ENGINEERING DEPARTMENT

Engineering
200 Old Bernal Ave.
(925) 931-5650
Fax: 931-5479

Construction Services
157 Main Street
(925) 931-5680
Fax: 931-5484

Landscape Architecture
200 Old Bernal Ave.
(925) 931-5650
Fax: 931-5479

P. O. BOX 520, Pleasanton, CA 94566-0802

- F. Surface parking or hardscape under solar panels or under shade structures with roofing material compliant with CRRC initial or aged thermal emittance per Green Building Code Table A5.105.106.11.2.2
- G. Playfields for organized sports
- H. Walkways (walkways shall be included in calculations for landscape area if in landscaped area).

Shade Calculations:

If a surface parking area has two or more unconnected parking areas, shade is calculated separately for each area. If they are connected by a joining drive, they are calculated as one lot.

Overlapping shade does not count twice.

The amount of shade provided by a given tree should be determined by using the tree canopy width at maturity as defined by the City of Pleasanton Tree Canopy Sizes for Shade Trees, Exhibit A.

If the designer proposes a tree that is not on the list of City of Pleasanton Tree Canopy Sizes for Shade Trees, then that tree will need to be approved by the City Landscape Architect. To determine acceptable diameter, utilize Sunset Western Gardens – the average diameter of the tree at maturity. For planting areas with less than 200 square feet of planting area per tree, the diameter should be calculated at 50% of the average canopy per Sunset. For planting areas with more than 200 square feet of planting area per tree, or with Silva Cells or approved equal, the diameter should be calculated at 75% of the average canopy per Sunset. The square footage of the planting area shall be determined based on the continuous planting area that is within the dripline of the tree.

A sample parking lot shade tree plan is provided in Exhibit B.

The shade calculations plan should include a:

- A. Table with:
 - i. Tree symbols and/or abbreviations
 - ii. Tree type
 - iii. Assumed tree canopy at 15 years (per the City of Pleasanton Tree Canopy Sizes for Shade Trees)
 - iv. Quantity of each type of tree
 - v. Shade quantities for
 - a. Surface parking area
 - 1. Total square footage of surface parking area
 - 2. Square footage of shaded surface parking area
 - 3. Percent shaded surface parking area
 - b. Landscape area
 - 1. Total square footage of landscape area
 - 2. Square footage of shaded landscape area

3. Percent shaded landscape area
- c. Hardscape area
 1. Total square footage of hardscape area
 2. Square footage of shaded hardscape area
 3. Percent shaded hardscape area

B. Plan that identifies:

- i. Surface parking area, shaded areas shown with a hatch
- ii. Landscape area, shaded areas shown with a hatch
- iii. Hardscape areas, shaded areas shown with a hatch

III. TREE CANOPY SIZES FOR SHADE TREES:

See Exhibit A

IV. RECOMMENDED TREE PLANTING PRACTICES:

Proper planting practices are essential to achieve healthy trees with large tree canopies to supply shade. These practices include, but are not limited to, the following measures:

- A. Trees shall have a minimum of 25 square feet of planting area per tree. Smaller dimensions may be considered subject to the approval of the City Landscape Architect.
- B. Inside dimensions (back of curb to back of curb) of a planting finger or island shall be a minimum of four feet wide. Trees should be planted halfway between the curbs, bands or edges of pavement.
- C. Two feet of vehicle overhang into a planter area is allowed, provided the planter is a minimum width of four feet and trees are aligned with parking striping.
- D. Tree types:
 - i. Provide a mix of tree types (species or cultivars) if more than ten trees are required.
 - ii. If 20 to 40 trees are required, no more than 50 percent of the trees may be of the same type.
 - iii. If more than 40 trees are required, the City recommends that no more than 25 percent of the trees be of the same type.
 - iv. The City encourages a minimum of 20 percent of the tree selection for a site to be oak or other native tree species if appropriate to the site.
- E. Continuous planting islands are encouraged to allow for multiple tree plantings and increased rootable soil volume. These islands might also be designed to incorporate surface water runoff treatment measures such as bio-swales. The City encourages the use of planter fingers be connected to continuous planting islands to increase the amount of planting area available to shade trees.
- F. The City encourages the use of structural soil systems, such as Silva Cells, for trees in parking or hardscape areas to increase the volume of rootable soil, and thus, the size of the canopy and amount of shade that each tree provides. Additional shade credit will be provided for trees with

soil systems, such as Silva Cells, as determined by the City Landscape Architect. Refer to Exhibit A for credits depending on tree type.

Exhibit A

City of Pleasanton Tree Canopy Sizes for Shade Trees

| TREES | | APPROVED CANOPY DIAMETER | |
|--|--------------------------------|--------------------------|---------------------------|
| Botanic Name | Common Name | Planting Area 25 | Planting Area 200 sf/tree |
| | | sf/tree min | min or Silva Cells |
| Acacia stenophylla | Shoestring Acacia | 10 | 15 |
| Acer ginnala 'Ruby Slippers' | Amur Maple | 8 | 10 |
| Acer rubrum 'Bowhall' or 'Armstrong' | Red Maple | 10 | 15 |
| Acer rubrum 'October Glory' or 'Red Sunset' | Red Maple | 20 | 30 |
| Aesculus californica | California Buckeye | 15 | 24 |
| Arbutus 'Marina' | Marina Arbutus | 15 | 25 |
| Arbutus unedo 'Compacta' | Dwarf Strawberry Tree | 5 | 8 |
| Arbutus unedo 'Oktoberfest' | Dwarf Strawberry Tree | 5 | 6 |
| Callistemon citrinus | Lemon Bottle Brush | 5 | 10 |
| Carpinus betulus | European Hornbeam | 20 | 30 |
| Cedrus deodora | Deodar Cedar | 20 | 30 |
| Celtis occidentalis | Common Hackberry | 25 | 40 |
| Celtis sinensis | Chinese Hackberry | 20 | 30 |
| Cercis canadensis | Eastern Redbud | 15 | 25 |
| Cercis occidentalis | Western Redbud | 8 | 10 |
| Cercis reniformis 'Oklahoma' | Oaklahoma Redbud | 15 | 25 |
| Chionanthus retusus | Chinese Fringe Tree | 10 | 15 |
| Chitalpa tashkentensis 'Pink Dawn' | White & Pink Chitalpa | 15 | 20 |
| Cinnamomum camphora | Camphor Tree | 30 | 45 |
| Cupressus sempervirens | Italian Cypress - full form | 5 | 8 |
| Eriobotrya deflexa | Bronze Loquat | 10 | 15 |
| Eucalyptus nicholii | Nichol's Willowleaf Peppermint | 15 | 25 |
| Feijoa sellowiana | Pineapple Guava | 10 | 15 |
| Fraxinus americana 'Autumn Purple' | White Ash | 25 | 40 |
| Fraxinus angustifolia 'Raywood' (F. oxycarpa) | Raywood Ash | 20 | 25 |
| Fraxinus uhdei 'Majestic Beauty' | Evergreen Ash | 30 | 45 |
| Fraxinus velutina 'Rio Grande' | Fan-Tex Ash | 20 | 25 |
| Ginkgo Biloba 'Autumn Gold' | Maidenhair Tree | 20 | 25 |
| Ginkgo Biloba 'Princeton Sentry' | Maidenhair Tree | 10 | 15 |
| Juglans hindsii | California Black Walnut | 25 | 35 |
| Juglans regia | English Walnut | 30 | 45 |
| Koelreuteria bipinnata | Chinese Flame Tree | 15 | 25 |
| Lagerstroemia 'Muskogee', 'Natchez', 'Tuscarora' | Crape Myrtle | 6 | 10 |
| Lagerstroemia 'Zuni' | Lavendar Crape Myrtle | 5 | 6 |
| Lagerstroemia indica 'Catawba' | Purple Crape Myrtle | 5 | 8 |
| Lagerstroemia 'Watermelon Red' | Watermelon Red Crape Myrtle | 10 | 15 |
| Laurus nobilis | Sweet Bay | 20 | 30 |
| Laurus 'Saratoga' | Saratoga Laurel | 20 | 30 |
| Leptospermum laevigatum | Australian Tea Tree | 10 | 15 |
| Leptospermum Scoparium | New Zealand Tea Tree | 5 | 8 |
| Lyonothamnus floribundus asplenifolius | Catalina Ironwood | 8 | 12 |
| Magnolia grandiflora 'Little Gem' | Southern Magnolia | 5 | 10 |
| Magnolia grandiflora 'Majestic Beauty' | Southern Magnolia | 10 | 15 |
| Magnolia X soulangiana | Saucer Magnolia | 15 | 20 |
| Melaleuca quinquenervia | Cajeput Tree | 10 | 15 |
| Metrosideros excelsa | New Zealand Christmas Tree | 15 | 25 |
| Nyssa sylvatica | Sour Gum/Tupleo | 15 | 20 |
| Olea europea 'Swan Hill' | European Olive | 15 | 20 |
| Pinus canariensis | Canary Island Pine | 15 | 20 |
| Pinus pinea | Italian Stone Pine | 25 | 40 |
| Pistacia chinensis | Chinese Pistache | 25 | 35 |
| Platanus acerifolia 'Bloodgood' | London Plane | 20 | 25 |
| Platanus racemosa | California Sycamore | 20 | 25 |
| Podocarpus gracilior | Fern Pine | 8 | 12 |
| Podocarpus macrophyllus | Yew Pine | 5 | 10 |
| Prunus caroliniana | Carolina Laurel Cherry | 10 | 15 |

Exhibit A

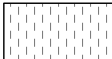
City of Pleasanton Tree Canopy Sizes for Shade Trees

| | | | |
|--|----------------------------|----|----|
| <i>Prunus cerasifera</i> 'Atropurpurea' | Purple Leaf Plum | 10 | 15 |
| <i>Prunus cerasifera</i> 'Krauter Vesuvius' | Purple-Leaf Flowering Plum | 8 | 10 |
| <i>Prunus ilicifolia</i> Lyonii | Catalina Cherry | 10 | 15 |
| <i>Pyrus kawakamii</i> | Evergreen Pear | 15 | 20 |
| <i>Quercus agrifolia</i> | Coast Live Oak | 25 | 40 |
| <i>Quercus chrysolepis</i> | Canyon Live Oak | 20 | 30 |
| <i>Quercus coccinea</i> | Scarlet Oak | 25 | 40 |
| <i>Quercus douglasii</i> | Blue Oak | 25 | 40 |
| <i>Quercus engelmannii</i> | Mesa Oak | 35 | 55 |
| <i>Quercus ilex</i> | Holly Oak | 25 | 35 |
| <i>Quercus kelloggii</i> | California Black Oak | 25 | 40 |
| <i>Quercus lobata</i> | Valley Oak | 35 | 55 |
| <i>Quercus robur</i> | English Oak | 15 | 25 |
| <i>Quercus robur</i> 'Fastigiata' | English Oak | 8 | 10 |
| <i>Quercus rubra</i> | Red Oak | 25 | 40 |
| <i>Quercus shumardii</i> | Shumard Oak | 25 | 40 |
| <i>Quercus suber</i> | Cork Oak | 25 | 35 |
| <i>Quercus virginiana</i> | Southern Live Oak | 35 | 55 |
| <i>Quercus wizlizenii</i> | Interior Live Oak | 30 | 45 |
| <i>Rhapiolepis</i> 'Majestic Beauty' | Majestic Beauty Hawthorne | 5 | 8 |
| <i>Rhus lancea</i> | African Sumac | 15 | 20 |
| <i>Sapium sebiferum</i> (<i>Triadica sebifera</i>) | Chinese Tallow Tree | 15 | 25 |
| <i>Schinus molle</i> | California Pepper Tree | 15 | 25 |
| <i>Schinus terebinthifolius</i> | Brazilian Pepper Tree | 15 | 25 |
| <i>Tilia cordata</i> | Little Leaf Linden | 15 | 20 |
| <i>Tristania conferta</i> (<i>Lophostemon confertus</i>) | Brisbane Box | 15 | 20 |
| <i>Ulmus</i> 'Frontier' | Frontier Elm | 15 | 25 |
| <i>Ulmus parvifolia</i> | Chinese Elm | 30 | 45 |
| <i>Ulmus propinqua</i> 'Emerald Sunshine' | Emerald Sunshine Elm | 15 | 20 |
| <i>Ulmus wilsoniana</i> 'Prospector' | Prospector Elm | 15 | 25 |
| <i>Zelkova serrata</i> 'Village Green' | Saw Leaf Zelkova | 25 | 35 |
| <i>Zelkova serrata</i> 'Wireless' | Saw Leaf Zelkova | 20 | 25 |

SHADE TREE CALCULATIONS

PROPERTY SIZE: 98,952

SURFACE PARKING AREA: 36,907 SF

 SHADE 27,047 SF 73%









HARDSCAPE AREA: 2,230 SF

 SHADE 677 SF 30%

LANDSCAPE AREA: 43,967 SF

 SHADE 22,878 SF 52%

SHADE TREE LEGEND

| SYMBOL | BOTANICAL/COMMON NAME | PROJECTED CANOPY* | QTY |
|---|---|-------------------|-----|
|  | FRAXINUS AMERICANA 'AUTUMN PURPLE' DRAKE CHINESE ELM | 40 FT.** | 8 |
|  | LAURUS 'SARATOGA' SARATOGA LAUREL | 30 FT.** | 4 |
|  | MAGNOLIA X SOULANGIANA SAUCER MAGNOLIA | 20 FT.** | 11 |
|  | PISTACIA CHINENSIS CHINESE PISTACHE | 25 FT. | 4 |
|  | QUERCUS LOBATA VALLEY OAK | 35 FT. | 8 |
|  | QUERCUS SUBER CORK OAK | 35 FT.** | 5 |
|  | QUERCUS WISLIZENII VALLEY LIVE OAK | 30 FT. | 4 |
|  | ZELKOVA SERRATA 'VILLAGE GREEN' SAWLEAF ZELKOVA | 35 FT.** | 6 |
| TOTAL TREES | | | 50 |

* DIAMETER OF TREE CANOPY PROJECTED AT 15 YEARS GROWTH. FOR APPROVED CANOPY SIZES REFER TO THE CITY OF PLEASANTON SHADE TREE GUIDELINES FOR COMMERCIAL PROPERTY.
 ** DENOTES TREE WITH AT LEAST 200 SF OF PLANTING AREA

BUILDING
(13,680 SF)

TRUCK LOADING ZONE
(2,168 SF)
EXEMPT FROM SHADE TREE
CALCULATIONS

LARCH ST.