CITY OF SAN PABLO

MASTER LANDSCAPE PLAN

CITY OF SAN PABLO

City of New Directions

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INTRODUCTION

Past policy for the planting of city street trees has been to issue a permit for the planting of a tree based on a list consisting of several species. This situation allowed in most instances for the property owner to pick a tree because of its looks, or one they may have been familiar with, which has created a conglomerate of trees to be placed throughout sections of the city. On many streets the appearance that has been created is very patchy. Consequently, the practice of allowing a resident to select a species has been eliminated.

The list of street trees in the original *Tree Master Plan* was compiled shortly after the incorporation of the City, at a time when relatively little was known of the full term development of many trees, or their eventual impact on sidewalks, curbs, gutters and maintenance needs.

Since the late 1950's and early 1960's there has been a tremendous amount of progress in the identification and development of trees suitable for the urban landscape, along with better techniques in the planting and care of these trees. In addition, in recent years there has been an emphasis placed on drought tolerant plants, both trees and ground cover alike. The City's maintenance division is responsible for landscape maintenance. A subset of ground cover that needed further study were those plants that will survive in bioswales, designed to treat storm water runoff. This knowledge has been used to create a well-planned and coordinated landscape program with a minimum of impact on our sidewalks, curbs and gutters. While aesthetically enhancing the City's street scape.

The purpose of a city wide Street Tree Planting Plan is to:

1. Insure continuity of plant species within designated areas for a uniform flow of color and visual effect.
2. Better manage plantings by species and location.
3. Have a guide for the planting of specific types of vegetation within designated areas of the city when private requests, grants or city street planting projects are involved.
4. Have a list of acceptable street trees with details on their growth habits, color, pest tolerance and management needs.
5. Have a guideline for the proper placement of plants; such as spacing distance, set back from corners, location within open planting strip areas and procedures for planting within concrete sidewalk areas.
6. Insure acceptable planting techniques are used for the benefit of future growth of the tree and compatibility with its immediate environment.

STREET ZONES

(Map 1)

ZONE	LOCATION
1	San Pablo Avenue
2	23rd Street
3	Rumrill Blvd.
4	El Portal Drive
5	San Pablo Dam Road
6	Road 20
7	Broadway
8	Amador

ROADWAY CLASSIFICATION

(Map 2)

Arterial Streets: San Pablo Ave, 23rd Street, Rumrill Blvd., El Portal Drive, San Pablo Dam Road, Giant Road, Evans Avenue

Collector Streets: Amador Ave., Church Lane, Market Ave., Road 20, Dover Ave., Emeric Ave., Stanford Ave., Brookside Drive, 11th Street, Stanton Ave., Rivers Avenue.

Residential: All other roadways are residential.

MAP 1

	PRIORITY
ZONE 1 San Pablo Ave.	1
ZONE 2 23rd Street	2
ZONE 3 Rumrill Blvd.	Complete Streets
ZONE 4 El Portal	3
ZONE 5 San Pablo Dam Road	5
ZONE 6 Road 20	4
ZONE 7 Broadway	6
ZONE 8 Amador Ave.	7

MAP 2

PRINCIPAL ARTERIAL

MINOR ARTERIAL

MAJOR COLLECTOR

ALL OTHER STREETS ARE RESIDENTIAL

City of San Pablo
Tree Matrix

Tree Species	Common Name	Street Type				Location			Foliage		Flower/Fruit				Microsite Conditions										Root Zone Mgt.		Nursery Status	Litter Issue	Pest & Diseases	Comments
		Zones	Arterial	Collector	Residential	Median	Side Walk	Over Head Obstruction	Deciduous/Evergreen	Fall color	Flower Color	Flower Period	Fruit	Fruiting Period	Shape	Height at Maturity (Feet)	Spread at Maturity (Feet)	Trunk Diameter at Breast Height at Maturity (inches)	Longevity (years)	Tolerates Full Sun	Tolerates Shade	Requires Good Drainage	Tolerates Poor Drainage	Tolerates Moist Soil	Drought Tolerant	Minimum Planter Width (feet)	Hardscape Damage Potential	Nursery Availability			
Acer rubrum **'Bowhall'**	**Bowhall Maple**	**5,8**	**X**	**X**	**X**	**X**	**X**		**D**	**Red, gold or orange**	**Red**	**Spring**	**Red winged seed, 1.5-6-3"**	**Summer**	**Upright, narrow**	**40**	**15**	**25**	**50-100**	**x**	**x**		**x**	**x**	**x**	**3**	**Moderate**	**Good**		**Susceptible to beetle borers and scales, oak root rot, phytoplthora, root rot and verticillum wilt.**	**Not to be planted under high voltage lines.**
Acer rubrum **'Brandywine'**	**Brandywine Maple**	**4**	**X**	**X**	**X**	**X**			**D**	**Deep red**	**Red**	**Spring**	**seedless**	**N/A**	**Oval**	**40**	**30**	**25**	**50-100**	**x**	**x**		**x**	**x**	**x**	**3**	**Moderate**	**Good**		**Susceptible to beetle borers and scales, oak root rot, phytoplthora, root rot and verticillum wilt.**	**Very good fall color and a possible *Liquidombar* substiute. Colors ten days later than most. *A. rubrum* cultivars.**
Lophostemon Confertus	**Brisbane Box**	**1,3,8**	**X**	**X**	**X**	**X**	**X**		**E**	**N/A**	**Showy, White**	**Spring**	**Brown capsule, 0.25-0.5"**	**Summer**	**Oval or rounded, erect or spreading and covers and extensive area**	**50**	**30**	**25**	**50-100**	**x**	**x**		**x**	**x**	**x**	**3**	**Low**	**Good**	**Dry Fruit**	**Susceptible to scales, Phytophthora and root rot.**	**Previously known at Tristanis conferta. Drought resistant once established. Smog tolerant. The red peeling bark and foliage are reminiscent of native Arbutus. Use like a small Eucalyptus tree with few structural problems. Extensive fruit drop from mature trees sometimes causes complaints.**
Koelreuteria bipinnata	**Chinese Flame Tree**	**1,4,5, 7**	**X**	**X**	**X**	**X**		**X**	**D**	**Bronze or Gold**	**Yellow**	**Summer or Fall**	**Prolific red-pink capsules, 1.5-3""**	**Fall**	**Rounded, umbrella or vase**	**35**	**35**	**20**	**50-100**	**x**	**x**	**x**		**x**	**x**	**4**	**Moderate**	**Good**	**Dry Fruit**	**Susceptible to beetle borers and scales.**	**Becomes a round-headed tree requiring little pruning at maturity, but needs training when young, as it tends to form multiple leaders.**
Cercis canadensis	**Eastern Redbud**	**3,5,8**	**X**	**X**	**X**	**X**	**X**	**X**	**D**	**Gold**	**Pink**	**Spring**	**Brown Pods, 1.5-3"**	**Summer**	**Rounded or Umbrella, erect or spreading with a low canopy**	**25**	**25**	**10**	**<50**	**x**	**x**			**x**		**3**	**Low**	**Good**	**Dry Fruit**	**Susceptible to caterpillars and scales, anthracnose, crown rot, oak root rot, phytopthora, root rot and verticillium wilt.**	**Showy pink flowers bloom best in full sun, and with moderate moisture. It may require light top pruning(not topping) of vigorous top shoots to maintain its height below 25' in height.**
Carpinus betulus **'Fastigata'**	**European Hornbeam**	**2,4**	**X**	**X**	**X**	**X**		**X**	**D**	**Red, gold or mulitcolor**	**Inconspicuous**	**Spring**	**Brown, winged seed, 0.25-.5"**	**Winter or Summer**	**Columnar or conical, erect with low canopy**	**35**	**40**	**15**	**50-100**	**x**	**x**			**x**	**x**	**3**	**Low**	**Good**	**Dry fruit**	**Resistant to verticillum wilt. Susceptible to aphids, scales, oak root rot and root rot.**	**Needs very little pruning to maintain good form, 2" leaves produce a handsome texture, and the winter twig pattern is attractive.**
Carpinus betulus **'Frans Fontaine'**	**European Hornbeam**	**3,7**	**X**	**X**	**X**	**X**	**X**	**X**	**D**	**Red, gold or mulitcolor**	**Inconspicuous**	**Spring**	**Brown, winged seed, 0.25-.5"**	**Winter or Summer**	**Columnar or conical, erect with low canopy**	**35**	**15**	**15**	**50-100**	**x**	**x**			**x**	**x**	**3**	**Low**	**good**	**Dry fruit**	**Resistant to verticillum wilt. Susceptible to aphids, scales, oak root rot and root rot.**	**Need very little pruning to maintain good form, 2" leaves produce a handsome texture, and the winter twig pattern is attractive.**
Lagerstromia **x 'Natchez'** ***Lagerstromia*** **x 'Tuscarora'**	**Hybrid Crape Myrtle**	**1,2,3, 4**	**X**	**X**	**X**	**X**	**X**	**X**	**D**	**Red, gold, orange or multicolor**	**Natchez' has white flowers. 'Tuscarora' has pink flowers.**	**Summer**	**Brown capsule, 0.25-0.5"**	**Fall**	**Oval, rounded, umbrella or vase, erect or spreading with a low canopy**	**25**	**15**	**15**	**50-100**	**x**	**x**			**x**	**x**	**3**	**Low**	**Good**	**Flowers, dry fruit**	**Resistant to powdery mildew. Susceptible to aphids and sooty mold.**	**Tuscarora' has multiple stems.**
Cupressus sempervirens	**Italian Cypress**	**2,3**	**X**	**X**	**X**	**X**	**X**		**E**	**N/A**	**Inconspicuous**	**Spring**	**Brown cone, 0.5-1.5"**	**Fall**	**Columnar, erect**	**50**	**30**	**25**	**50-150**	**x**	**x**		**x**	**x**	**x**	**3**	**Moderate**	**Good**	**Dry Fruit**	**Resistant to Texas root rot. Susceptible to spider mites, gummosis, phytophthora and root rot.**	
Acer rubrum **'October Glory'**	**October Glory Maple**	**3,6,7**	**X**	**X**	**X**	**X**			**D**	**Deep red**	**Red**	**Spring**	**Brown winged see, 1.5-3"**	**Summer**	**Oval or rounded**	**40**	**35**	**25**	**50-100**	**x**	**x**		**x**	**x**	**x**	**3**	**Moderate**	**Good**		**Susceptible to beetle borers and scales, oak root rot, phytoplthora, root rot and verticillum wilt.**	**Very good fall color and a possible *Liquidombar* substiute. The list of the A. rubrum cultivers to color in the fall.**
Tilia tomentosa 'Green Mountain' ***Tilia tomentosa 'Sterling'***	**Silver Linden**	**1,5,8**	**X**	**X**	**X**	**X**			**D**	**Gold**	**Showy, Fragrant, yellow or white**	**Summer**	**Gray capsule, 0.25-0.5''**	**Fall**	**Conical, oval or umbrella, erect or spreading with high canopy and extensive area**	**50**	**40**	**25**	**50-100**	**x**	**x**	**x**		**x**	**x**	**3**	**Low**	**Good**	**Dry Fruit**	**Susceptible to root rot, sooty mold and verticillium wilt.**	**Light green leaves with silver undersides move in any breeze. Faster growing than most Lindens, with good yellow fall color.**
Laurus Nobills **'Saratoga'**	**Sweet Bay**	**2,5,6, 8**	**X**	**X**	**X**	**X**		**X**	**E**	**N/A**	**Yellow-green**	**Spring**	**Black berry, 0.5"**	**Summer**	**Conical or oval**	**35**	**20**	**25**	**50-150**	**x**	**x**	**x**		**x**	**x**	**4**	**Moderate**	**Good**	**Dry Fruit**	**Susceptible to psyllids and scales, phytophtora and root rot.**	**Dense canopy of fragrant leaves. Early pruning needed to train a good shape; pruning needed less frequently with age. Requires removal of suckers.**
Ceris Occidentailis	**Westren Redbud**	**1,6**	**X**	**X**	**X**	**X**		**x**	**D**	**Multi colored**	**Purple**	**Spring**	**Purple Pods, 1.5 -3"**	**Spring**	**Rounded or umbrella shape**	**20'**	**20'**	**?**	**40-150**	**x**	**x**	**?**	**?**	**x**	**x**	**?**	**Low**	**?**	**Dry Fruit**	**Resistant to Oak Root Fungas. Susceptible to Catipillars, Scale, Crown Rot, Phytophthora, and Root Rot.**	**Leaves Round, Blue Grey, Gray Green,or medium green,red, gold, or Multicolored.**

Zone #1 San Pablo Ave
#2 23rd Street
#3 Rumrill Blvd
#4 El Portal Drive
#5 San Pablo Dam Road
#6 Road 20
#7 Broadway Avenue
#8 Amador Street

City of San Pablo
Tree Matrix
Zone 1

Tree Species	Common Name	Street Type				Location			Foliage		Flower/Fruit				Microsite Conditions										Root Zone Mgt.		Nursery Status	Litter Issue	Pest & Diseases	Comments
		Zones	Arterial	Collector	Residential	Median	Side Walk	Over Head Obstruction	Deciduous/Evergreen	Fall color	Flower Color	Flower Period	Fruit	Fruiting Period	Shape	Height at Maturity (Feet)	Spread at Maturity (Feet)	Trunk Diameter at Breast Height at Maturity (inches)	Longevity (years)	Tolerates Full Sun	Tolerates Shade	Requires Good Drainage	Tolerates Poor Drainage	Tolerates Moist Soil	Drought Tolerant	Minimum Planter Width (feet)	Hardscape Damage Potential	Nursery Availability			
Koelreuteria bipinnata	Chinese Flame Tree	1,4,5, 7	X	X	X	X		X	D	Bronze or Gold	Yellow	Summer or Fall	Prolific red-pink capsules, 1.5-3""	Fall	Rounded, umbrella or vase	35	35	20	50-100	x	x	x		x	x	4	Moderate	Good	Dry Fruit	Susceptible to beetle borers and scales.	Becomes a round-headed tree requiring little pruning at maturity, but needs training when young, as it tends to form multiple leaders.
Lagerstromia x 'Natchez' *Lagerstromia* x 'Tuscarora'	Hybrid Crape Myrtle	1,2,3, 4	X	X	X	X	X	X	D	Red, gold, orange or multicolor	Natchez' has white flowers. 'Tuscarora' has pink flowers.	Summer	Brown capsule, 0.25-0.5"	Fall	Oval, rounded, umbrella or vase, erect or spreading with a low canopy	25	15	15	50-100	x	x			x	x	3	Low	Good	Flowers, dry fruit	Resistant to powdery mildew. Susceptible to aphids and sooty mold.	Tuscarora' has multiple stems.
Tilia tomentosa 'Green Mountain' *Tilia tomentosa 'Sterling'*	Silver Linden	1,5,8	X	X	X	X			D	Gold	Showy, Fragrant, yellow or white	Summer	Gray capsule, 0.25-0.5"	Fall	Conical, oval or umbrella, erect or spreading with high canopy and extensive area	50	40	25	50-100	x	x	x		x	x	3	Low	Good	Dry Fruit	Susceptible to root rot, sooty mold and verticillium wilt	Light green leaves with silver undersides move in any breeze. Faster growing than most Lindens, with good yellow fall color in Alameda.
Lophostemon confertus	Brisbane Box	1,3,8	X	X	X	X	X		E	N/A	Showy, White	Spring	Brown capsule, 0.25-0.5"	Summer	Oval or rounded, erect or spreading and covers and extensive area	50	30	25	50-100	x	x		x	x	x	3	Low	Good	Dry Fruit	Susceptible to scales, Phytophthora and root rot.	Previously known at Tristanis conferta. Drought resistant once established. Smog tolerant. The red peeling bark and foliage are reminiscent of native Arbutus. Use like a small Eucalyptus tree with few structural problems. Extensive fruit drop from mature trees sometimes causes complaints.
Ceris occidentailis	Westren Redbud	1,6	X	X	X	X		x	D	Multi colored	Purple	Spring	Purple Pods, 1.5 -3"	Spring	Rounded or umbrella shape	20'	20'	?	40-150	x	x	?	?	x	x	?	Low	?	Dry Fruit	Resistant to Oak Root Fungas. Susceptible to Catipillars, Scale, Crown Rot, Phytophthora, and Root Rot	Leaves Round, Blue Grey, Gray Green,or medium green,red, gold, or Multicolored

Zone #1 San Pablo Ave
#2 23rd Street
#3 Rumrill Blvd
#4 El Portal Drive
#5 San Pablo Dam Road
#6 Road 20
#7 Broadway Avenue
#8 Amador Street

City of San Pablo

Tree Matrix

Zone 2

Tree Species	Common Name	Street Type				Location			Foliage		Flower/Fruit				Microsite Conditions											Root Zone Mgt.		Nursery Status	Litter Issue	Pest & Diseases	Comments
		Zones	Arterial	Collector	Residential	Median	Side Walk	Over Head Obstruction	Deciduous/Evergreen	Fall color	Flower Color	Flower Period	Fruit	Fruiting Period	Shape	Height at Maturity (Feet)	Spread at Maturity (Feet)	Trunk Diameter at Breast Height at Maturity (inches)	Longevity (years)	Tolerates Full Sun	Tolerates Shade	Requires Good Drainage	Tolerates Poor Drainage	Tolerates Moist Soil	Drought Tolerant	Minimum Planter Width (feet)	Hardscape Damage Potential	Nursery Availability			
Carpinus betulus **'Fastigata'**	**European Hornbeam**	**2,4**	**X**	**X**	**X**	**X**		**X**	**D**	**Red, gold or mulitcolor**	**Inconspicuous**	**Spring**	**Brown, winged seed, 0.25-.5"**	**Winter or Summer**	**Columnar or conical, erect with low canopy**	**35**	**40**	**15**	**50-100**	**x**	**x**			**x**	**x**	**3**	**Low**	**Good**	**Dry fruit**	**Resistant to verticillum wilt. Susceptible to aphids, scales, oak root rot and root rot.**	**Needs very little pruning to maintain good form, 2" leaves produce a handsome texture, and the winter twig pattern is attractive.**
Cupressus sempervirens	**Italian Cypress**	**2,3**	**X**	**X**	**X**	**X**	**X**		**E**	**N/A**	**Inconspicuous**	**Spring**	**Brown cone, 0.5-1.5"**	**Fall**	**Columnar, erect**	**50**	**30**	**25**	**50-150**	**x**	**x**		**x**	**x**	**x**	**3**	**Moderate**	**Good**	**Dry Fruit**	**Resistant to Texas root rot. Susceptible to spider mites, gummosis, phytophthora and root rot.**	
Lagerstromia **x 'Natchez'** ***Lagerstromia*** **x 'Tuscarora'**	**Hybrid Crape Myrtle**	**1,2,3, 4**	**X**	**X**	**X**	**X**	**X**	**X**	**D**	**Red, gold, orange or multicolor**	**Natchez' has white flowers. 'Tuscarora' has pink flowers.**	**Summer**	**Brown capsule, 0.25-0.5"**	**Fall**	**Oval, rounded, umbrella or vase, erect or spreading with a low canopy**	**25**	**15**	**15**	**50-100**	**x**	**x**			**x**	**x**	**3**	**Low**	**Good**	**Flowers, dry fruit**	**Resistant to powdery mildew. Susceptible to aphids and sooty mold.**	**Tuscarora' has multiple stems.**
Laurus Nobills **'Saratoga'**	**Sweet Bay**	**2,5,6, 8**	**X**	**X**	**X**	**X**		**X**	**E**	**N/A**	**Yellow-green**	**Spring**	**Black berry, 0.5"**	**Summer**	**Conical or oval**	**35**	**20**	**25**	**50-150**	**x**	**x**	**x**		**x**	**x**	**4**	**Moderate**	**Good**	**Dry Fruit**	**Susceptible to psyllids and scales, phytophtora and root rot.**	**Dense canopy of fragrant leaves. Early pruning needed to train a good shape; pruning needed less frequently with age. Requires removal of suckers.**

Zone #1 San Pablo Ave
#2 23rd Street
#3 Rumrill Blvd
#4 El Portal Drive
#5 San Pablo Dam Road
#6 Road 20
#7 Broadway Avenue
#8 Amador Street

City of San Pablo
Tree Matrix
Zone 3

Tree Species	Common Name	Street Type				Location			Foliage		Flower/Fruit				Microsite Conditions										Root Zone Mgt.		Nursery Status	Litter Issue	Pest & Diseases	Comments
		Zones	Arterial	Collector	Residential	Median	Side Walk	Over Head Obstruction	Deciduous/Evergreen	Fall color	Flower Color	Flower Period	Fruit	Fruiting Period	Shape	Height at Maturity (Feet)	Spread at Maturity (Feet)	Trunk Diameter at Breast Height at Maturity (inches)	Longevity (years)	Tolerates Full Sun	Tolerates Shade	Requires Good Drainage	Tolerates Poor Drainage	Tolerates Moist Soil	Drought Tolerant	Minimum Planter Width (feet)	Hardscape Damage Potential	Nursery Availability			
Acer rubrum "October Glory'	October Glory Maple	3,6,7	X	X	X	X			D	Deep red	Red	Spring	Brown winged see, 1.5-3"	Summer	Oral or rounded	40	35	25	50-100	x	x		x	x	x	3	Moderate	Good		Susceptible to beetle borers and scales, oak root rot, phytoplthora, root rot and verticillum wilt.	Very good fall color and a possible *Liquidombar* substiute. The list of the A. rubrum cultivers to color in the fall.
Carpinus betulus 'Frans Fontaine'	European Hornbeam	3,7	X	X	X	X	X	X	D	Red, gold or mulitcolor	Inconspicuous	Spring	Brown, winged seed, 0.25-.5"	Winter or Summer	Columnar or conical, erect with low canopy	35	15	15	50-100	x	x			x	x	3	Low	good	Dry fruit	Resistant to verticillum wilt. Susceptible to aphids, scales, oak root rot and root rot.	Need very little pruning to maintain good form, 2" leaves produce a handsome texture, and the winter twig pattern is attractive.
Cupressus sempervirens	Italian Cypress	2,3	X	X	X	X	X		E	N/A	Inconspicuous	Spring	Brown cone, 0.5-1.5"	Fall	Columnar, erect	50	30	25	50-150	x	x		x	x	x	3	Moderate	Good	Dry Fruit	Resistant to Texas root rot. Susceptible to spider mites, gummosis, phytophthora and root rot.	
Lagerstromia x 'Natchez' *Lagerstromia* x 'Tuscarora'	Hybrid Crape Myrtle	1,2,3, 4	X	X	X	X	X	X	D	Red, gold, orange or multicolor	Natchez' has white flowers. 'Tuscarora' has pink flowers.	Summer	Brown capsule, 0.25-0.5"	Fall	Oval, rounded, umbrella or vase, erect or spreading with a low canopy	25	15	15	50-100	x	x			x	x	3	Low	Good	Flowers, dry fruit	Resistant to powdery mildew. Susceptible to aphids and sooty mold.	Tuscarora' has multiple stems.
Lophostemon confertus	Brisbane Box	1,3,8	X	X	X	X	X		E	N/A	Showy, White	Spring	Brown capsule, 0.25-0.5"	Summer	Oval or rounded, erect or spreading and covers and extensive area	50	30	25	50-100	x	x		x	x	x	3	Low	Good	Dry Fruit	Susceptible to scales, Phytophthora and root rot.	Previously known at Tristanis conferta. Drought resistant once established. Smog tolerant. The red peeling bark and foliage are reminiscent of native Arbutus. Use like a small Eucalyptus tree with few structural problems. Extensive fruit drop from mature trees sometimes causes complaints.
Cercis canadensis	Eastern Redbud	3,5,8	X	X	X	X	X	X	D	Gold	Pink	Spring	Brown Pods, 1.5-3"	Summer	Rounded or Umbrella, erect or spreading with a low canopy	25	25	10	<50	x	x			x		3	Low	Good	Dry Fruit	Susceptible to caterpillars and scales, anthracnose, crown rot, oak root rot, phytopthora, root rot and verticillium wilt.	Showy pink flowers bloom best in full sun, and with moderate moisture. It may require light top pruning(not topping) of vigorous top shoots to maintain its height below 25' in height.

Zone #1 San Pablo Ave
#2 23rd Street
#3 Rumrill Blvd
#4 El Portal Drive
#5 San Pablo Dam Road
#6 Road 20
#7 Broadway Avenue
#8 Amador Street

City of San Pablo

Tree Matrix

Zone 4

Tree Species	Common Name	Street Type				Location			Foliage		Flower/Fruit				Microsite Conditions										Root Zone Mgt.		Nursery Status	Litter Issue	Pest & Diseases	Comments
		Zones	Arterial	Collector	Residential	Median	Side Walk	Over Head Obstruction	Deciduous/Evergreen	Fall color	Flower Color	Flower Period	Fruit	Fruiting Period	Shape	Height at Maturity (Feet)	Spread at Maturity (Feet)	Trunk Diameter at Breast Height at Maturity (inches)	Longevity (years)	Tolerates Full Sun	Tolerates Shade	Requires Good Drainage	Tolerates Poor Drainage	Tolerates Moist Soil	Drought Tolerant	Minimum Planter Width (feet)	Hardscape Damage Potential	Nursery Availability			
Acer rubrum **'Brandywine'**	**Brandywine Maple**	**4**	**X**	**X**	**X**	**X**			**D**	**Deep red**	**Red**	**Spring**	**seedless**	**N/A**	**Oval**	**40**	**30**	**25**	**50-100**	**x**	**x**		**x**	**x**	**x**	**3**	**Moderate**	**Good**		**Susceptible to beetle borers and scales, oak root rot, phytoplthora, root rot and verticillum wilt.**	**Very good fall color and a possible *Liquidombar* substiute. Colors ten days later than most. *A. rubrum* cultivars.**
Carpinus betulus **'Fastigata'**	**European Hornbeam**	**2,4**	**X**	**X**	**X**	**X**		**X**	**D**	**Red, gold or mulitcolor**	**Inconspicuous**	**Spring**	**Brown, winged seed, 0.25-.5"**	**Winter or Summer**	**Columnar or conical, erect with low canopy**	**35**	**40**	**15**	**50-100**	**x**	**x**			**x**	**x**	**3**	**Low**	**Good**	**Dry fruit**	**Resistant to verticillum wilt. Susceptible to aphids, scales, oak root rot and root rot.**	**Needs very little pruning to maintain good form, 2" leaves produce a handsome texture, and the winter twig pattern is attractive.**
Koelreuteria bipinnata	**Chinese Flame Tree**	**1,4,5, 7**	**X**	**X**	**X**	**X**		**X**	**D**	**Bronze or Gold**	**Yellow**	**Summer or Fall**	**Prolific red-pink capsules, 1.5-3""**	**Fall**	**Rounded, umbrella or vase**	**35**	**35**	**20**	**50-100**	**x**	**x**	**x**		**x**	**x**	**4**	**Moderate**	**Good**	**Dry Fruit**	**Susceptible to beetle borers and scales.**	**Becomes a round-headed tree requiring little pruning at maturity, but needs training when young, as it tends to form multiple leaders.**
Lagerstromia **x 'Natchez'** ***Lagerstromia*** **x 'Tuscarora'**	**Hybrid Crape Myrtle**	**1,2,3, 4**	**X**	**X**	**X**	**X**	**X**	**X**	**D**	**Red, gold, orange or multicolor**	**Natchez' has white flowers. 'Tuscarora' has pink flowers.**	**Summer**	**Brown capsule, 0.25-0.5"**	**Fall**	**Oval, rounded, umbrella or vase, erect or spreading with a low canopy**	**25**	**15**	**15**	**50-100**	**x**	**x**			**x**	**x**	**3**	**Low**	**Good**	**Flowers, dry fruit**	**Resistant to powdery mildew. Susceptible to aphids and sooty mold.**	**Tuscarora' has multiple stems.**

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#2 23rd Street
#3 Rumrill Blvd
#4 El Portal Drive
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#6 Road 20
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City of San Pablo
Tree Matrix
Zone 5

Tree Species	Common Name	Street Type				Location			Foliage		Flower/Fruit				Microsite Conditions										Root Zone Mgt.		Nursery Status	Litter Issue	Pest & Diseases	Comments
		Zones	Arterial	Collector	Residential	Median	Side Walk	Over Head Obstruction	Deciduous/Evergreen	Fall color	Flower Color	Flower Period	Fruit	Fruiting Period	Shape	Height at Maturity (Feet)	Spread at Maturity (Feet)	Trunk Diameter at Breast Height at Maturity (inches)	Longevity (years)	Tolerates Full Sun	Tolerates Shade	Requires Good Drainage	Tolerates Poor Drainage	Tolerates Moist Soil	Drought Tolerant	Minimum Planter Width (feet)	Hardscape Damage Potential	Nursery Availability			
Acer rubrum 'Bowhall'*	Bowhall Maple	5,8	X	X	X	X	X		D	Red, gold or orange	Red	Spring	Red winged seed, 1.5-6-3"	Summer	Upright, narrow	40	15	25	50-100	x	x		x	x	x	3	Moderate	Good		Susceptible to beetle borers and scales, oak root rot, phytoplthora, root rot and verticillum wilt.	Not to be planted under high voltage lines.
Koelreuteria bipinnata	Chinese Flame Tree	1,4,5, 7	X	X	X	X		X	D	Bronze or Gold	Yellow	Summer or Fall	Prolific red-pink capsules, 1.5-3""	Fall	Rounded, umbrella or vase	35	35	20	50-100	x	x	x		x	x	4	Moderate	Good	Dry Fruit	Susceptible to beetle borers and scales.	Becomes a round-headed tree requiring little pruning at maturity, but needs training when young, as it tends to form multiple leaders.
Laurus Nobills 'Saratoga'	Sweet Bay	2,5,6, 8	X	X	X	X		X	E	N/A	Yellow-green	Spring	Black berry, 0.5"	Summer	Conical or oval	35	20	25	50-150	x	x	x		x	x	4	Moderate	Good	Dry Fruit	Susceptible to psyllids and scales, phytophtora and root rot.	Dense canopy of fragrant leaves. Early pruning needed to train a good shape; pruning needed less frequently with age. Requires removal of suckers.
Tilia tomentosa 'Green Mountain' *Tilia tomentosa 'Sterling'*	Silver Linden	1,5,8	X	X	X	X			D	Gold	Showy, Fragrant, yellow or white	Summer	Gray capsule, 0.25-0.5"	Fall	Conical, oval or umbrella, erect or spreading with high canopy and extensive area	50	40	25	50-100	x	x	x		x	x	3	Low	Good	Dry Fruit	Susceptible to root rot, sooty mold and verticillium wilt	Light green leaves with silver undersides move in any breeze. Faster growing than most Lindens, with good yellow fall color in Alameda.
Cercis canadensis	Eastern Redbud	3,5,8	X	X	X	X	X	X	D	Gold	Pink	Spring	Brown Pods, 1.5-3"	Summer	Rounded or Umbrella, erect or spreading with a low canopy	25	25	10	<50	x	x			x		3	Low	Good	Dry Fruit	Susceptible to caterpillars and scales, anthracnose, crown rot, oak root rot, phytopthora, root rot and verticillium wilt.	Showy pink flowers bloom best in full sun, and with moderate moisture. It may require light top pruning(not topping) of vigorous top shoots to maintain its height below 25' in height.

Zone #1 San Pablo Ave
#2 23rd Street
#3 Rumrill Blvd
#4 El Portal Drive
#5 San Pablo Dam Road
#6 Road 20
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#8 Amador Street

City of San Pablo

Tree Matrix

Zone 6

Tree Species	Common Name	Street Type				Location			Foliage		Flower/Fruit				Microsite Conditions											Root Zone Mgt.		Nursery Status	Litter Issue	Pest & Diseases	Comments
		Zones	Arterial	Collector	Residential	Median	Side Walk	Over Head Obstruction	Deciduous/Evergreen	Fall color	Flower Color	Flower Period	Fruit	Fruiting Period	Shape	Height at Maturity (Feet)	Spread at Maturity (Feet)	Trunk Diameter at Breast Height at Maturity (inches)	Longevity (years)	Tolerates Full Sun	Tolerates Shade	Requires Good Drainage	Tolerates Poor Drainage	Tolerates Moist Soil	Drought Tolerant	Minimum Planter Width (feet)	Hardscape Damage Potential	Nursery Availability			
Acer rubrum **"October Glory'**	**October Glory Maple**	**3,6,7**	**X**	**X**	**X**	**X**			**D**	**Deep red**	**Red**	**Spring**	**Brown winged see, 1.5-3"**	**Summer**	**Oral or rounded**	**40**	**35**	**25**	**50-100**	**x**	**x**		**x**	**x**	**x**	**3**	**Moderate**	**Good**		**Susceptible to beetle borers and scales, oak root rot, phytoplthora, root rot and verticillum wilt.**	**Very good fall color and a possible *Liquidombar* substiute. The list of the A. rubrum cultivers to color in the fall.**
Laurus Nobills **'Saratoga'**	**Sweet Bay**	**2,5,6, 8**	**X**	**X**	**X**	**X**		**X**	**E**	**N/A**	**Yellow-green**	**Spring**	**Black berry, 0.5"**	**Summer**	**Conical or oval**	**35**	**20**	**25**	**50-150**	**x**	**x**	**x**		**x**	**x**	**4**	**Moderate**	**Good**	**Dry Fruit**	**Susceptible to psyllids and scales, phytophtora and root rot.**	**Dense canopy of fragrant leaves. Early pruning needed to train a good shape; pruning needed less frequently with age. Requires removal of suckers.**
Ceris occidentailis	**Westren Redbud**	**1,6**	**X**	**X**	**X**	**X**		**x**	**D**	**Multi colored**	**Purple**	**Spring**	**Purple Pods, 1.5 -3"**	**Spring**	**Rounded or umbrella shape**	**20'**	**20'**	**?**	**40-150**	**x**	**x**	**?**	**?**	**x**	**x**	**?**	**Low**	**?**	**Dry Fruit**	**Resistant to Oak Root Fungas. Susceptible to Catipillars, Scale, Crown Rot, Phytophthora, and Root Rot**	**Leaves Round, Blue Grey, Gray Green,or medium green,red, gold, or Multicolored**

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#2 23rd Street
#3 Rumrill Blvd
#4 El Portal Drive
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#6 Road 20
#7 Broadway Avenue
#8 Amador Street

City of San Pablo

Tree Matrix

Zone 7

Tree Species	Common Name	Street Type				Location			Foliage		Flower/Fruit				Microsite Conditions											Root Zone Mgt.		Nursery Status	Litter Issue	Pest & Diseases	Comments
		Zones	Arterial	Collector	Residential	Median	Side Walk	Over Head Obstruction	Deciduous/Evergreen	Fall color	Flower Color	Flower Period	Fruit	Fruiting Period	Shape	Height at Maturity (Feet)	Spread at Maturity (Feet)	Trunk Diameter at Breast Height at Maturity (inches)	Longevity (years)	Tolerates Full Sun	Tolerates Shade	Requires Good Drainage	Tolerates Poor Drainage	Tolerates Moist Soil	Drought Tolerant	Minimum Planter Width (feet)	Hardscape Damage Potential	Nursery Availability			
Acer rubrum "October Glory'	October Glory Maple	3,6,7	X	X	X	X			D	Deep red	Red	Spring	Brown winged see, 1.5-3"	Summer	Oral or rounded	40	35	25	50-100	x	x		x	x	x	3	Moderate	Good		Susceptible to beetle borers and scales, oak root rot, phytoplthora, root rot and verticillum wilt.	Very good fall color and a possible *Liquidombar* substiute. The list of the A. rubrum cultivers to color in the fall.
Carpinus betulus 'Frans Fontaine'	European Hornbeam	3,7	X	X	X	X	X	X	D	Red, gold or mulitcolor	Inconspicuous	Spring	Brown, winged seed, 0.25-.5"	Winter or Summer	Columnar or conical, erect with low canopy	35	15	15	50-100	x	x			x	x	3	Low	good	Dry fruit	Resistant to verticillum wilt. Susceptible to aphids, scales, oak root rot and root rot.	Need very little pruning to maintain good form, 2" leaves produce a handsome texture, and the winter twig pattern is attractive.
Koelreuteria bipinnata	Chinese Flame Tree	1,4,5, 7	X	X	X	X		X	D	Bronze or Gold	Yellow	Summer or Fall	Prolific red-pink capsules, 1.5-3""	Fall	Rounded, umbrella or vase	35	35	20	50-100	x	x	x		x	x	4	Moderate	Good	Dry Fruit	Susceptible to beetle borers and scales.	Becomes a round-headed tree requiring little pruning at maturity, but needs training when young, as it tends to form multiple leaders.

Zone #1 San Pablo Ave
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City of San Pablo
Tree Matrix
Zone 8

Tree Species	Common Name	Street Type				Location			Foliage		Flower/Fruit				Microsite Conditions										Root Zone Mgt.		Nursery Status	Litter Issue	Pest & Diseases	Comments
		Zones	Arterial	Collector	Residential	Median	Side Walk	Over Head Obstruction	Deciduous/Evergreen	Fall color	Flower Color	Flower Period	Fruit	Fruiting Period	Shape	Height at Maturity (Feet)	Spread at Maturity (Feet)	Trunk Diameter at Breast Height at Maturity (inches)	Longevity (years)	Tolerates Full Sun	Tolerates Shade	Requires Good Drainage	Tolerates Poor Drainage	Tolerates Moist Soil	Drought Tolerant	Minimum Planter Width (feet)	Hardscape Damage Potential	Nursery Availability			
Acer rubrum 'Bowhall'*	Bowhall Maple	5,8	X	X	X	X	X		D	Red, gold or orange	Red	Spring	Red winged seed, 1.5-6-3"	Summer	Upright, narrow	40	15	25	50-100	x	x		x	x	x	3	Moderate	Good		Susceptible to beetle borers and scales, oak root rot, phytoplthora, root rot and verticillum wilt.	Not to be planted under high voltage lines.
Laurus Nobills 'Saratoga'	Sweet Bay	2,5,6, 8	X	X	X	X		X	E	N/A	Yellow-green	Spring	Black berry, 0.5"	Summer	Conical or oval	35	20	25	50-150	x	x	x		x	x	4	Moderate	Good	Dry Fruit	Susceptible to psyllids and scales, phytophtora and root rot.	Dense canopy of fragrant leaves. Early pruning needed to train a good shape; pruning needed less frequently with age. Requires removal of suckers.
Tilia tomentosa 'Green Mountain' *Tilia tomentosa 'Sterling'*	Silver Linden	1,5,8	X	X	X	X			D	Gold	Showy, Fragrant, yellow or white	Summer	Gray capsule, 0.25-0.5''	Fall	Conical, oval or umbrella, erect or spreading with high canopy and extensive area	50	40	25	50-100	x	x	x		x	x	3	Low	Good	Dry Fruit	Susceptible to root rot, sooty mold and verticillium wilt	Light green leaves with silver undersides move in any breeze. Faster growing than most Lindens, with good yellow fall color in Alameda.
Lophostemon confertus	Brisbane Box	1,3,8	X	X	X	X	X		E	N/A	Showy, White	Spring	Brown capsule, 0.25-0.5"	Summer	Oval or rounded, erect or spreading and covers and extensive area	50	30	25	50-100	x	x		x	x	x	3	Low	Good	Dry Fruit	Susceptible to scales, Phytophthora and root rot.	Previously known at Tristanis conferta. Drought resistant once established. Smog tolerant. The red peeling bark and foliage are reminiscent of native Arbutus. Use like a small Eucalyptus tree with few structural problems. Extensive fruit drop from mature trees sometimes causes complaints.
Cercis canadensis	Eastern Redbud	3,5,8	X	X	X	X	X	X	D	Gold	Pink	Spring	Brown Pods, 1.5-3"	Summer	Rounded or Umbrella, erect or spreading with a low canopy	25	25	10	<50	x	x			x		3	Low	Good	Dry Fruit	Susceptible to caterpillars and scales, anthracnose, crown rot, oak root rot, phytopthora, root rot and verticillium wilt.	Showy pink flowers bloom best in full sun, and with moderate moisture. It may require light top pruning(not topping) of vigorous top shoots to maintain its height below 25' in height.

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TREE CHARACTERISTICS

Common Name: Bowhall Maple

Botanical Name: Acer Rubrum 'Bowhall'

Growth: Height: 40 Spread: 15

Shape: Upright, narrow

Color:

Fall Color	Flower Color
Red, gold or orange	Red

Pests: Susceptible to beetle borers and scales, oak root rot, phytoplthora, root rot and verticillum wilt.

Other Factors: Not to be planted under high voltage lines.

TREE CHARACTERISTICS

Common Name: Brandywine Maple

Botanical Name: Acer rubrum 'Brandywine'

Growth: Height: 40 Spread: 30

Shape: Oval

Color:

Fall Color	Flower Color
Deep red	Red

Pests: Susceptible to beetle borers and scales, oak root rot, phytoplthora, root rot and verticillum wilt.

Other Factors: Very good fall color and a possible Liquidombar substiute. Colors ten days later than most. A. rubrum cultivars.

TREE CHARACTERISTICS

Common Name: Brisbane Box

Botanical Name: Lophostemon Confertus

Growth: Height: 50 Spread: 30

Shape: Oval or rounded, erect or spreading and covers and extensive area

Color:

Fall Color	Flower Color
N/A	Showy, white

Pests: Susceptible to scales, Phytophthora and root rot.

Other Factors: Previously known at Tristanis conferta. Drought resistant once established. Smog tolerant. The red peeling bark and foliage are reminiscent of native Arbutus. Use like a small Eucalyptus tree with few structural problems. Extensive fruit drop from mature trees sometimes causes complaints.

TREE CHARACTERISTICS

Common Name: Chinese Flame Tree

Botanical Name: Koelreuteria bipinnata

Growth: Height: 35 Spread: 35

Shape: Rounded, umbrella or vase

Color:

Fall Color	Flower Color
Bronze or gold	Yellow

Pests: Susceptible to beetle borers and scales.

Other Factors: Becomes a round-headed tree requiring little pruning at maturity, but needs training when young, as it tends to form multiple leaders.

TREE CHARACTERISTICS

Common Name: Eastren redbud

Botanical Name: Cerccis Canadensis

Growth: Height: 25 Spread: 25

Shape: Rounded or Umbrella, erect or spreading with a low canopy

Color:

Fall Color	Flower Color
Gold	Pink

Pests: Susceptible to caterpillars and scales, anthracnose, crown rot, oak root rot, phytopthora, root rot and verticillium wilt.

Other Factors: Showy pink flowers bloom best in full sun, and with moderate moisture. It may require light top pruning(not topping) of vigorous top shoots to maintain its height below 25' in height.

TREE CHARACTERISTICS

Common Name: European Hornbeam

Botanical Name: Carpinus Betulus 'Fastigata'

Growth: Height: 35 Spread: 40

Shape: Columnar or conical, erect with low canopy

Color:

Fall Color	Flower Color
Red, gold or mulicolor	Inconspicuous

Pests: Resistant to verticillum wilt. Susceptible to aphids, scales, oak root rot and root rot.

Other Factors: Needs very little pruning to maintain good form, 2" leaves produce a handsome texture, and the winter twig pattern is attractive.

TREE CHARACTERISTICS

Common Name: European Hornbeam

Botanical Name: Carpinus betulus 'Frans Fontaine'

Growth: Height: 35 Spread: 15

Shape: Columnar or conical, erect with low canopy

Color:

Fall Color	Flower Color
Red, gold or multicolor	Inconspicuous

Pests: Resistant to verticillum wilt. Susceptible to aphids, scales, oak root rot and root rot.

Other Factors: Need very little pruning to maintain good form, 2" leaves produce a handsome texture, and the winter twig pattern is attractive.

TREE CHARACTERISTICS

Common Name: Crape Myrtle

Botanical Name: Lagerstromia x 'Natchez'

Growth: Height: 25 Spread: 15

Shape: Oval, rounded, umbrella or vase, erect or spreading with a low canopy

Color:

Fall Color	Flower Color
Red, gold, orange or multicolor	White

Pests: Resistant to powdery mildew. Susceptible to aphids and sooty mold.

Other Factors:

TREE CHARACTERISTICS

Common Name: Crape Myrtle

Botanical Name: Lagerstromia x 'Tuscarora'

Growth: Height: 25 Spread: 15

Shape: Oval, rounded, umbrella or vase, erect or spreading with a low canopy

Color:

Fall Color	Flower Color
Red, gold, orange or multicolor	Pink

Pests: Resistant to powdery mildew. Susceptible to aphids and sooty mold.

Other Factors: Has multiple stems.

TREE CHARACTERISTICS

Common Name: Italian Cypress

Botanical Name: Cupressus sempervirens

Growth: Height: 50 Spread: 30

Shape: Columnar, erect

Color:

Fall Color	Flower Color
N/A	Inconspicuous

Pests: Resistant to Texas root rot. Susceptible to spider mites, gummosis, phytophthora and root rot.

Other Factors:

TREE CHARACTERISTICS

Common Name: October Glory Maple

Botanical Name: Acer rubrum 'October Glory'

Growth: Height: 40 Spread: 35

Shape: Oval or rounded

Color:

Fall Color	Flower Color
Deep red	Red

Pests: Susceptible to beetle borers and scales, oak root rot, phytoplthora, root rot and verticillum wilt.

Other Factors: Very good fall color and a possible Liquidombar substiute. The list of the A. rubrum cultivers to color in the fall.

TREE CHARACTERISTICS

Common Name: Silver Linden

Botanical Name: Tilia tomentosa 'Green Mountain'
Tilia tomentosa 'Sterling'

Growth: Height: 50 Spread: 40

Shape: Conical, oval or umbrella, erect or spreading with high canopy and extensive area

Color:

Fall Color	Flower Color
Gold	Showy, fragrant, yellow or white

Pests: Susceptible to root rot, sooty mold and verticillium wilt

Other Factors: Light green leaves with silver undersides move in any breeze. Faster growing than most Lindens, with good yellow fall color.

TREE CHARACTERISTICS

Common Name: Sweet Bay

Botanical Name: Laurus Nobills 'Saratoga'

Growth: Height: 35 Spread: 20

Shape: Conical or oval

Color:

Fall Color	Flower Color
N/A	Yellow-green

Pests: Susceptible to psyllids and scales, phytophtora and root rot.

Other Factors: Dense canopy of fragrant leaves. Early pruning needed to train a good shape; pruning needed less frequently with age. Requires removal of suckers.

TREE CHARACTERISTICS

Common Name: Western Redbud

Botanical Name: Ceris Occidentailis

Growth: Height: 20 Spread: 20

Shape: Rounded or umbrella shape

Color:

Fall Color	Flower Color
Multi-colored	Purple

Pests: Resistant to Oak Root Fungas. Susceptible to Catipillars, Scale, Crown Rot, Phytophthora, and Root Rot.

Other Factors: Leaves Round, Blue Grey, Gray Green,or medium green,red, gold, or Multicolored.

City of San Pablo

Shrub - Ground Cover Matrix

Common Name, Botanical Name		**Foliage**		**Flower/Fruit**				**Microsite Conditions**															**Pest & Diseases**	**Comments**
	Zone	**Annual/ Perennial**	**Fall color**	**Flower Color**	**Flower Period**	**Fruit**	**Fruiting Period**	**Shape**	**Shrub**	**Ground Cover**	**Height at Maturity (Feet)**	**Spread at Maturity (Feet)**	**Trunk Diameter at Breast Height at Maturity (inches)**	**Longevity (years)**	**Tolerates Full Sun**	**Tolerates Shade**	**Requires Good Drainage**	**Tolerates Poor Drainage**	**Tolerates Moist Soil**	**Drought Tolerant**	**Minimum Planter Width (feet)**		
Autumn sage, Salvia Greggii	1,4,8	p	N/A	Red	Summer, Fall	N/A	N/A	N/A	X		1-3	1-3	N/A	N/A	x		x			x	N/A		The top hummingbird attracting flowers in dry climates.
Bee's Bliss Salvia, Salvia 'Bee's Bliss'	1,4,8	p	N/A	Blue/Purple	Spring	N/A	N/A	N/A	X		1-2	3-6	N/A	N/A	x		x			x	N/A		
Berkeley Sedge, Carex divulsa	**5**	p	N/A	Greenish-Brown	Spring	N/A	N/A	N/A	x		1-2	1-2	N/A	N/A	x	x		x	x	x	N/A		
Blue Bedder, Penstemon heterophyllus 'Margarita Bop'	4,5,8	p	N/A	Blue/Purple	Spring, Summer	N/A	N/A	N/A	X		1-3	1-2	N/A	N/A	x		x			x	N/A		
California Lilac, Ceanothus 'Joyce Coulter'	**2,3,7**	p	N/A	Blue	Spring	N/A	N/A	N/A	x	x	2-3	10-15	N/A	10-15	x		x			x	N/A		Crushed flowers and water lather into a soap-like consistency. Flowers smell like cornmeal.
Canyon Prince Wild Rye, Leymus condensatus	**1,4,5,8**	p	N/A	Yellow	Summer	N/A	N/A	N/A	x		2-3	3-4	N/A	N/A	x					x	N/A		
Cape Rush, Chondropetalum tectorum	**2**	p	N/A	Brown	Summer, Fall	N/A	N/A	N/A	x		2-3	3-4	N/A	N/A	x	x			x	x	N/A		
Colorado Gold Treasure Flower, Gazania linearis 'Colorado Gold'	3	p	N/A	Yellow	Summer	N/A	N/A	N/A		X	0.5	1	N/A	N/A	x		x			x	N/A	Powdery mildew, bacterial leaf spot, fungal spots, crown	
Common Boxwood, Buxus sempervirens	1,4,5,6	p	N/A	Yellow	Spring	Green, Brown, 0.5"	Summer	Rounded	X		15-20	15-20	N/A	50	x	x			x	x	N/A	Psyllid, Scales and Spider Mites, Phytophthora and Root Rot.	Allergy and Irritant Health Hazard, Ingestion may cause upset stomach.
Creeping Fig, Ficus Pumila	if needed		N/A	N/A	N/A	N/A	N/A	Spreading		X	upto 30'	N/A	N/A	N/A	X	X							Parts are poisonous
Creeping Juniper, Cupressanceae "Wiltonii"	3,6,8	p		N/A	N/A	N/A	N/A	Spreading		X	6 inches	8	N/a		X					X	N/A		
Creeping Raspberry, Rubus Pentalobus 'Golden Quilt'	1,4,8	p	Red	White	Spring	Yellow, 0.5"	N/A	Rounded		X	0.5-1	0.5-1	N/A	N/A	x		x			x	N/A		New growth is yellow, and later fades to green.
Creeping Rosemary, Rosmarinus prostratus	**2,5**	p	N/A	Blue	Summer	N/A	N/A	N/A	X	X	1-2	2-3	N/A	N/A	x		x			x	N/A	Spittle bugs, brown scale and rosemary leaf beetle.	
Dara's Choice Sage, Salvia 'Dara's Choice'	2,4,8	p	N/A	Blue	Spring, Summer	N/A	N/A	N/A	X		1.5-3	3-6	N/A	N/A	x		x			x	N/A	Aphids on new growth and powdery mildew.	
Douglas Iris, Iris douglasiana	1	p	N/A	Purple	Spring	N/A	N/A	N/A	x		1-2	2-3	N/A	N/A	x		x			x	N/A		
Fraser Photinia , Photinia X Fraseri	4,8	p	N/A	White	Spring	Red, 0.5"	Fall	Rounded	X		8-12	8-12	N/A	50-150	x				x	x	N/A	Mites, Scales, Aphids and Caterpillars, Fire Blight and Leaf Spot, Aphids, Sooty Mold.	Some varieties of Photinia are toxic due to the presence of cyanogenic glycosides in the foliage and fruit.
Hair Grass, Deschampsia cespitosa	**2**	p	N/A	White	Summer	N/A	N/A	N/A	X		2-5	1	N/A	N/A	x			x	x		N/A	Ergot, several rusts, stripe smut, blind seed, aphids, billbugs, leafhoppers.	
Hevenly Bamboo, Dwarf Nandina domestica	2,6,8	p	N/A	White	Late Spring -Early summer	Red .2	Fall	N/A	x		upto 8'	6'	N/a		X	X			X		N/A		
Island Alumroot, Heuchera maxima	5,6	p	N/A	Pink/ White	Spring	N/A	N/A	N/A	X		1-3	1-3	N/A	N/A	x	x	x			x	N/A		

City of San Pablo

Shrub - Ground Cover Matrix

Common Name, Botanical Name		**Foliage**		**Flower/Fruit**				**Microsite Conditions**															**Pest & Diseases**	**Comments**
	Zone	**Annual/ Perennial**	**Fall color**	**Flower Color**	**Flower Period**	**Fruit**	**Fruiting Period**	**Shape**	**Shrub**	**Ground Cover**	**Height at Maturity (Feet)**	**Spread at Maturity (Feet)**	**Trunk Diameter at Breast Height at Maturity (inches)**	**Longevity (years)**	**Tolerates Full Sun**	**Tolerates Shade**	**Requires Good Drainage**	**Tolerates Poor Drainage**	**Tolerates Moist Soil**	**Drought Tolerant**	**Minimum Planter Width (feet)**		
Newport Dwarf, Escallonia	1,3, 5,7, 8	p	N/A	White, Red, or Pink	Summer	N/A	N/A	N/A	X		3-15	3-15	N/A	N/A	x					x	N/A	Chinese wax scale, oak root fungus	Escallonia's major disease threats include leaf spot, a fungal infection producing gray-centered, purple-to-black leaf spots.
San Miguel Island Buckwheat/ Red Buckwheat, Eriogonum grande Var. Rubescens	4,5, 6,8	p	N/A	Pink	Spring, Summer, Fall	N/A	N/A	N/A	X		1-2	2-3	N/A	N/A	x		x			x	N/A	Root fungi in damp soils.	
Turkish Sage/ Jerusalem Sage, Phlomis russeliana	3,4, 5,8	p	N/A	Yellow	Spring, Summer	N/A	N/A	N/A	X		1-2	4-5	N/A	N/A	x		x			x	N/A		

Zone #1 San Pablo Ave
#2 23rd Street
#3 Rumrill Blvd
#4 El Portal Drive
#5 San Pablo Dam Road
#6 Road 20
#7 Broadway Avenue
#8 Amador Street

City of San Pablo
Shrub - Ground Cover Matrix
Zone 1

Common Name, Botanical Name		**Foliage**		**Flower/Fruit**				**Microsite Conditions**															**Pest & Diseases**	**Comments**
	Zone	**Annual/ Perennial**	**Fall color**	**Flower Color**	**Flower Period**	**Fruit**	**Fruiting Period**	**Shape**	**Shrub**	**Ground Cover**	**Height at Maturity (Feet)**	**Spread at Maturity (Feet)**	**Trunk Diameter at Breast Height at Maturity (inches)**	**Longevity (years)**	**Tolerates Full Sun**	**Tolerates Shade**	**Requires Good Drainage**	**Tolerates Poor Drainage**	**Tolerates Moist Soil**	**Drought Tolerant**	**Minimum Planter Width (feet)**		
Autumn sage, Salvia Greggii	1,4,8	p	N/A	Red	Summer, Fall	N/A	N/A	N/A	X		1-3	1-3	N/A	N/A	x		x			x	N/A		The top hummingbird attracting flowers in dry climates.
Bee's Bliss Salvia, Salvia 'Bee's Bliss'	1,4,8	p	N/A	Blue/Purple	Spring	N/A	N/A	N/A	X		1-2	3-6	N/A	N/A	x		x			x	N/A		
Common Boxwood, Buxus sempervirens	1,4,5,6	p	N/A	Yellow	Spring	Green, Brown, 0.5"	Summer	Rounded	X		15-20	15-20	N/A	50	x	x			x	x	N/A	Psyllid, Scales and Spider Mites, Phytophthora and Root	Allergy and Irritant Health Hazard, Ingestion may cause upset stomach.
Creeping Raspberry, Rubus Pentalobus 'Golden Quilt'	1,4,8	p	Red	White	Spring	Yellow, 0.5"	N/A	Rounded		X	0.5-1	0.5-1	N/A	N/A	x		x			x	N/A		New growth is yellow, and later fades to green.
Douglas Iris, Iris douglasiana	1	p	N/A	Purple	Spring	N/A	N/A	N/A	x		1-2	2-3	N/A	N/A	x		x			x	N/A		
Newport Dwarf, Escallonia	1,3,5,7,8	p	N/A	White, Red, or Pink	Summer	N/A	N/A	N/A	X		3-15	3-15	N/A	N/A	x					x	N/A	Chinese wax scale, oak root fungus	Escallonia's major disease threats include leaf spot, a fungal infection producing gray-centered, purple-to-black leaf spots.

Zone #1 San Pablo Ave
#2 23rd Street
#3 Rumrill Blvd
#4 El Portal Drive
#5 San Pablo Dam Road
#6 Road 20
#7 Broadway Avenue
#8 Amador Street

City of San Pablo
Shrub - Ground Cover Matrix
Zone 2

Common Name, Botanical Name		Foliage		Flower/Fruit				Microsite Conditions														Pest & Diseases	Comments
	Zone	Annual/ Perennial	Fall color	Flower Color	Flower Period	Fruit	Fruiting Period	Shape	Shrub	Ground Cover	Height at Maturity (Feet)	Spread at Maturity (Feet)	Trunk Diameter at Breast Height at Maturity (inches)	Longevity (years)	Tolerates Full Sun	Tolerates Shade	Requires Good Drainage	Tolerates Poor Drainage	Tolerates Moist Soil	Drought Tolerant	Minimum Planter Width (feet)		
California Lilac, Ceanothus 'Joyce Coulter'	**2,3, 7**	p	N/A	Blue	Spring	N/A	N/A	N/A	x	x	2-3	10-15	N/A	10-15	x		x			x	N/A		Crushed flowers and water lather into a soap-like consistency. Flowers smell like cornmeal.
Cape Rush, Chondropetalum tectorum	**2**	p	N/A	Brown	Summer, Fall	N/A	N/A	N/A	x		2-3	3-4	N/A	N/A	x	x			x	x	N/A		
Creeping Rosemary, Rosmarinus prostratus	**2,5**	p	N/A	Blue	Summer	N/A	N/A	N/A	X	X	1-2	2-3	N/A	N/A	x		x			x	N/A	Spittle bugs, brown scale and rosemary leaf beetle.	
Dara's Choice Sage, Salvia 'Dara's Choice'	2,4, 8	p	N/A	Blue	Spring, Summer	N/A	N/A	N/A	X		1.5-3	3-6	N/A	N/A	x		x			x	N/A	Aphids on new growth and powdery mildew.	
Hair Grass, Deschampsia cespitosa	**2**	p	N/A	White	Summer	N/A	N/A	N/A	X		2-5	1	N/A	N/A	x			x	x		N/A	Ergot, several rusts, stripe smut, blind seed, aphids, billbugs, leafhoppers.	
Hevenly Bamboo, Nandina domestica	2,6,8	p	N/A	White	Late Spring -Early summer	Red .2	Fall	N/A	x		upto 8'	6'	N/a		X	X			X		N/A		

Zone #1 San Pablo Ave
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#3 Rumrill Blvd
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#7 Broadway Avenue
#8 Amador Street

City of San Pablo
Shrub - Ground Cover Matrix
Zone 3

Common Name, Botanical Name		**Foliage**		**Flower/Fruit**				**Microsite Conditions**															**Pest & Diseases**	**Comments**
	Zone	**Annual/ Perennial**	**Fall color**	**Flower Color**	**Flower Period**	**Fruit**	**Fruiting Period**	**Shape**	**Shrub**	**Ground Cover**	**Height at Maturity (Feet)**	**Spread at Maturity (Feet)**	**Trunk Diameter at Breast Height at Maturity (inches)**	**Longevity (years)**	**Tolerates Full Sun**	**Tolerates Shade**	**Requires Good Drainage**	**Tolerates Poor Drainage**	**Tolerates Moist Soil**	**Drought Tolerant**	**Minimum Planter Width (feet)**		
California Lilac, Ceanothus 'Joyce Coulter'	**2,3, 7**	**p**	**N/A**	**Blue**	**Spring**	**N/A**	**N/A**	**N/A**	**x**	**x**	**2-3**	**10-15**	**N/A**	**10-15**	**x**		**x**			**x**	**N/A**		**Crushed flowers and water lather into a soap-like consistency. Flowers smell like cornmeal.**
Colorado Gold Treasure Flower, Gazania linearis 'Colorado Gold'	3	**p**	**N/A**	**Yellow**	**Summer**	**N/A**	**N/A**	**N/A**		**X**	**0.5**	**1**	**N/A**	**N/A**	**x**		**x**			**x**	**N/A**	**Powdery mildew, bacterial leaf spot, fungal spots, crown**	
Creeping Juniper, Cupressanceae "Wiltonii"	3,6,8	p		**N/A**	**N/A**	**N/A**	**N/A**	**Spreading**		**X**	**6 inches**	**8**	**N/a**		**X**					**X**	**N/A**		
Newport Dwarf, Escallonia	1,3, 5,7, 8	**p**	**N/A**	**White, Red, or Pink**	**Summer**	**N/A**	**N/A**	**N/A**	**X**		**3-15**	**3-15**	**N/A**	**N/A**	**x**					**x**	**N/A**	**Chinese wax scale, oak root fungus**	**Escallonia's major disease threats include leaf spot, a fungal infection producing gray-centered, purple-to-black leaf spots.**
Turkish Sage/ Jerusalem Sage, Phlomis russeliana	3,4, 5,8	**p**	**N/A**	**Yellow**	**Spring, Summer**	**N/A**	**N/A**	**N/A**	**X**		**1-2**	**4-5**	**N/A**	**N/A**	**x**		**x**			**x**	**N/A**		

Zone #1 San Pablo Ave
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#3 Rumrill Blvd
#4 El Portal Drive
#5 San Pablo Dam Road
#6 Road 20
#7 Broadway Avenue
#8 Amador Street

City of San Pablo
Shrub - Ground Cover Matrix
Zone 4

Common Name, Botanical Name		Foliage		Flower/Fruit				Microsite Conditions														Pest & Diseases	Comments
	Zone	Annual/ Perennial	Fall color	Flower Color	Flower Period	Fruit	Fruiting Period	Shape	Shrub	Ground Cover	Height at Maturity (Feet)	Spread at Maturity (Feet)	Trunk Diameter at Breast Height at Maturity (inches)	Longevity (years)	Tolerates Full Sun	Tolerates Shade	Requires Good Drainage	Tolerates Poor Drainage	Tolerates Moist Soil	Drought Tolerant	Minimum Planter Width (feet)		
Autumn sage, Salvia Greggii	1,4,8	p	N/A	Red	Summer, Fall	N/A	N/A	N/A	X		1-3	1-3	N/A	N/A	x		x			x	N/A		The top hummingbird attracting flowers in dry climates.
Bee's Bliss Salvia, Salvia 'Bee's Bliss'	1,4,8	p	N/A	Blue/Purple	Spring	N/A	N/A	N/A	X		1-2	3-6	N/A	N/A	x		x			x	N/A		
Blue Bedder, Penstemon heterophyllus 'Margarita Bop'	4,5,8	p	N/A	Blue/Purple	Spring, Summer	N/A	N/A	N/A	X		1-3	1-2	N/A	N/A	x		x			x	N/A		
Common Boxwood, Buxus sempervirens	1,4,5,6	p	N/A	Yellow	Spring	Green, Brown, 0.5"	Summer	Rounded	X		15-20	15-20	N/A	50	x	x			x	x	N/A	Psyllid, Scales and Spider Mites, Phytophthora and Root	Allergy and Irritant Health Hazard, Ingestion may cause upset stomach.
Creeping Raspberry, Rubus Pentalobus 'Golden Quilt'	1,4,8	p	Red	White	Spring	Yellow, 0.5"	N/A	Rounded		X	0.5-1	0.5-1	N/A	N/A	x		x			x	N/A		New growth is yellow, and later fades to green.
Dara's Choice Sage, Salvia 'Dara's Choice'	2,4,8	p	N/A	Blue	Spring, Summer	N/A	N/A	N/A	X		1.5-3	3-6	N/A	N/A	x		x			x	N/A	Aphids on new growth and powdery mildew.	
Fraser Photinia , Photinia X Fraseri	4,8	p	N/A	White	Spring	Red, 0.5"	Fall	Rounded	X		8-12	8-12	N/A	50-150	x				x	x	N/A	Mites, Scales, Aphids and Caterpillars, Fire Blight and Leaf Spot, Aphids, Sooty Mold.	Some varieties of Photinia are toxic due to the presence of cyanogenic glycosides in the foliage and fruit.
Turkish Sage/ Jerusalem Sage, Phlomis russeliana	3,4,5,8	p	N/A	Yellow	Spring, Summer	N/A	N/A	N/A	X		1-2	4-5	N/A	N/A	x		x			x	N/A		

Zone #1 San Pablo Ave
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#3 Rumrill Blvd
#4 El Portal Drive
#5 San Pablo Dam Road
#6 Road 20
#7 Broadway Avenue
#8 Amador Street

City of San Pablo
Shrub - Ground Cover Matrix
Zone 5

Common Name, Botanical Name		**Foliage**		**Flower/Fruit**				**Microsite Conditions**														**Pest & Diseases**	**Comments**
	Zone	**Annual/ Perennial**	**Fall color**	**Flower Color**	**Flower Period**	**Fruit**	**Fruiting Period**	**Shape**	**Shrub**	**Ground Cover**	**Height at Maturity (Feet)**	**Spread at Maturity (Feet)**	**Trunk Diameter at Breast Height at Maturity (inches)**	**Longevity (years)**	**Tolerates Full Sun**	**Tolerates Shade**	**Requires Good Drainage**	**Tolerates Poor Drainage**	**Tolerates Moist Soil**	**Drought Tolerant**	**Minimum Planter Width (feet)**		
Berkeley Sedge, Carex divulsa	**5**	**p**	**N/A**	**Greenish-Brown**	**Spring**	**N/A**	**N/A**	**N/A**	**x**		**1-2**	**1-2**	**N/A**	**N/A**	**x**	**x**		**x**	**x**	**x**	**N/A**		
Blue Bedder, Penstemon heterophyllus 'Margarita Bop'	4,5, 8	**p**	**N/A**	**Blue/Purple**	**Spring, Summer**	**N/A**	**N/A**	**N/A**	**X**		**1-3**	**1-2**	**N/A**	**N/A**	**x**		**x**			**x**	**N/A**		
Common Boxwood, Buxus sempervirens	1,4, 5,6	**p**	**N/A**	**Yellow**	**Spring**	**Green, Brown, 0.5"**	**Summer**	**Rounded**	**X**		**15-20**	**15-20**	**N/A**	**50**	**x**	**x**			**x**	**x**	**N/A**	**Psyllid, Scales and Spider Mites, Phytophthora and Root**	**Allergy and Irritant Health Hazard, Ingestion may cause upset stomach.**
Island Alumroot, Heuchera maxima	5,6	**p**	**N/A**	**Pink/ White**	**Spring**	**N/A**	**N/A**	**N/A**	**X**		**1-3**	**1-3**	**N/A**	**N/A**	**x**	**x**	**x**			**x**	**N/A**		
Newport Dwarf, Escallonia	1,3, 5,7, 8	**p**	**N/A**	**White, Red, or Pink**	**Summer**	**N/A**	**N/A**	**N/A**	**X**		**3-15**	**3-15**	**N/A**	**N/A**	**x**					**x**	**N/A**	**Chinese wax scale, oak root fungus**	**Escallonia's major disease threats include leaf spot, a fungal infection producing gray-centered, purple-to-black leaf spots.**
Turkish Sage/ Jerusalem Sage, Phlomis russeliana	3,4, 5,8	**p**	**N/A**	**Yellow**	**Spring, Summer**	**N/A**	**N/A**	**N/A**	**X**		**1-2**	**4-5**	**N/A**	**N/A**	**x**		**x**			**x**	**N/A**		

Zone #1 San Pablo Ave
#2 23rd Street
#3 Rumrill Blvd
#4 El Portal Drive
#5 San Pablo Dam Road
#6 Road 20
#7 Broadway Avenue
#8 Amador Street

City of San Pablo

Shrub - Ground Cover Matrix

Zone 6

Common Name, Botanical Name		**Foliage**		**Flower/Fruit**				**Microsite Conditions**															**Pest & Diseases**	**Comments**
	Zone	**Annual/ Perennial**	**Fall color**	**Flower Color**	**Flower Period**	**Fruit**	**Fruiting Period**	**Shape**	**Shrub**	**Ground Cover**	**Height at Maturity (Feet)**	**Spread at Maturity (Feet)**	**Trunk Diameter at Breast Height at Maturity (inches)**	**Longevity (years)**	**Tolerates Full Sun**	**Tolerates Shade**	**Requires Good Drainage**	**Tolerates Poor Drainage**	**Tolerates Moist Soil**	**Drought Tolerant**	**Minimum Planter Width (feet)**		
Common Boxwood, Buxus sempervirens	1,4, 5,6	p	N/A	Yellow	Spring	Green, Brown, 0.5"	Summer	Rounded	X		15-20	15-20	N/A	50	x	x			x	x	N/A	Psyllid, Scales and Spider Mites, Phytophthora and Root	Allergy and Irritant Health Hazard, Ingestion may cause upset stomach.
Creeping Juniper, Cupressanceae "Wiltonii"	3,6,8	p		N/A	N/A	N/A	N/A	Spreading		X	6 inches	8	N/a		X					X	N/A		
Hevenly Bamboo, Nandina domestica	2,6,8	p	N/A	White	Late Spring -Early summer	Red .2	Fall	N/A	x		upto 8'	6'	N/a		X	X			X		N/A		
Island Alumroot, Heuchera maxima	5,6	p	N/A	Pink/ White	Spring	N/A	N/A	N/A	X		1-3	1-3	N/A	N/A	x	x	x			x	N/A		

Zone #1 San Pablo Ave
#2 23rd Street
#3 Rumrill Blvd
#4 El Portal Drive
#5 San Pablo Dam Road
#6 Road 20
#7 Broadway Avenue
#8 Amador Street

City of San Pablo
Shrub - Ground Cover Matrix
Zone 7

Common Name, Botanical Name		**Foliage**		**Flower/Fruit**				**Microsite Conditions**															**Pest & Diseases**	**Comments**
	Zone	**Annual/ Perennial**	**Fall color**	**Flower Color**	**Flower Period**	**Fruit**	**Fruiting Period**	**Shape**	**Shrub**	**Ground Cover**	**Height at Maturity (Feet)**	**Spread at Maturity (Feet)**	**Trunk Diameter at Breast Height at Maturity (inches)**	**Longevity (years)**	**Tolerates Full Sun**	**Tolerates Shade**	**Requires Good Drainage**	**Tolerates Poor Drainage**	**Tolerates Moist Soil**	**Drought Tolerant**	**Minimum Planter Width (feet)**		
California Lilac, Ceanothus 'Joyce Coulter'	**2,3, 7**	**p**	**N/A**	**Blue**	**Spring**	**N/A**	**N/A**	**N/A**	**x**	**x**	**2-3**	**10-15**	**N/A**	**10-15**	**x**		**x**			**x**	**N/A**		**Crushed flowers and water lather into a soap-like consistency. Flowers smell like cornmeal.**
Newport Dwarf, Escallonia	1,3, 5,7, 8	**p**	**N/A**	**White, Red, or Pink**	**Summer**	**N/A**	**N/A**	**N/A**	**X**		**3-15**	**3-15**	**N/A**	**N/A**	**x**					**x**	**N/A**	**Chinese wax scale, oak root fungus**	**Escallonia's major disease threats include leaf spot, a fungal infection producing gray-centered, purple-to-black leaf spots.**

Zone #1 San Pablo Ave
#2 23rd Street
#3 Rumrill Blvd
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City of San Pablo
Shrub - Ground Cover Matrix
Zone 8

Common Name, Botanical Name		**Foliage**		**Flower/Fruit**				**Microsite Conditions**															**Pest & Diseases**	**Comments**
	Zone	**Annual/ Perennial**	**Fall color**	**Flower Color**	**Flower Period**	**Fruit**	**Fruiting Period**	**Shape**	**Shrub**	**Ground Cover**	**Height at Maturity (Feet)**	**Spread at Maturity (Feet)**	**Trunk Diameter at Breast Height at Maturity (inches)**	**Longevity (years)**	**Tolerates Full Sun**	**Tolerates Shade**	**Requires Good Drainage**	**Tolerates Poor Drainage**	**Tolerates Moist Soil**	**Drought Tolerant**	**Minimum Planter Width (feet)**		
Autumn sage, Salvia Greggii	1,4,8	p	N/A	Red	Summer, Fall	N/A	N/A	N/A	X		1-3	1-3	N/A	N/A	x		x			x	N/A		The top hummingbird attracting flowers in dry climates.
Bee's Bliss Salvia, Salvia 'Bee's Bliss'	1,4,8	p	N/A	Blue/Purple	Spring	N/A	N/A	N/A	X		1-2	3-6	N/A	N/A	x		x			x	N/A		
Blue Bedder, Penstemon heterophyllus 'Margarita Bop'	4,5,8	p	N/A	Blue/Purple	Spring, Summer	N/A	N/A	N/A	X		1-3	1-2	N/A	N/A	x		x			x	N/A		
Creeping Juniper, Cupressanceae "Wiltonii"	3,6,8	p		N/A	N/A	N/A	N/A	Spreading		X	6 inches	8	N/a		X					X	N/A		
Creeping Raspberry, Rubus Pentalobus 'Golden Quilt'	1,4,8	p	Red	White	Spring	Yellow, 0.5"	N/A	Rounded		X	0.5-1	0.5-1	N/A	N/A	x		x			x	N/A		New growth is yellow, and later fades to green.
Dara's Choice Sage, Salvia 'Dara's Choice'	2,4,8	p	N/A	Blue	Spring, Summer	N/A	N/A	N/A	X		1.5-3	3-6	N/A	N/A	x		x			x	N/A	Aphids on new growth and powdery mildew.	
Fraser Photinia , Photinia X Fraseri	4,8	p	N/A	White	Spring	Red, 0.5"	Fall	Rounded	X		8-12	8-12	N/A	50-150	x				x	x	N/A	Mites, Scales, Aphids and Caterpillars, Fire Blight and Leaf Spot, Aphids, Sooty Mold.	Some varieties of Photinia are toxic due to the presence of cyanogenic glycosides in the foliage and fruit.
Hevenly Bamboo, Nandina domestica	2,6,8	p	N/A	White	Late Spring -Early summer	Red .2	Fall	N/A	x		upto 8'	6'	N/a		X	X			X		N/A		
Newport Dwarf, Escallonia	1,3,5,7,8	p	N/A	White, Red, or Pink	Summer	N/A	N/A	N/A	X		3-15	3-15	N/A	N/A	x					x	N/A	Chinese wax scale, oak root fungus	Escallonia's major disease threats include leaf spot, a fungal infection producing gray-centered, purple-to-black leaf spots.
Turkish Sage/ Jerusalem Sage, Phlomis russeliana	3,4,5,8	p	N/A	Yellow	Spring, Summer	N/A	N/A	N/A	X		1-2	4-5	N/A	N/A	x		x			x	N/A		

Zone #1 San Pablo Ave
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SHRUB CHARACTERISTICS

Common Name: Autumn Sage

Botanical Name: Salvia Greggii

Growth: Height: 1-3 Spread: 1-3

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Red

Pests:

Other Factors: The top hummingbird attracting flowers in dry climates

SHRUB CHARACTERISTICS

Common Name: Bee's Bliss Salvia

Botanical Name: Salvia 'Bee's Bliss'

Growth: Height: 1-2 Spread: 3-6

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Blue/Purple

Pests:

Other Factors:

SHRUB CHARACTERISTICS

Common Name: Berkeley Sedge

Botanical Name: Carex Divulsa

Growth: Height: 1-2 Spread: 1-2

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Greenish-Brown

Pests:

Other Factors:

SHRUB CHARACTERISTICS

Common Name: Blue Bedder

Botanical Name: Penstemon Heterophyllus, 'Margarita Bop'

Growth: Height: 1-3 Spread: 1-2

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Blue/Purple

Pests:

Other Factors:

SHRUB CHARACTERISTICS

Common Name: California Lilac

Botanical Name: Ceanothous 'Joyce Coulter'

Growth: Height: 2-3 Spread: 10-15

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Blue

Pests:

Other Factors: Crushed flowers and water lather into a soap-like consistency. Flowers smell like cornmeal.

SHRUB CHARACTERISTICS

Common Name: Canyon Price Wild Rye

Botanical Name: Leymus Condensatus

Growth: Height: 2-3 Spread: 3-4

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Yellow

Pests:

Other Factors:

SHRUB CHARACTERISTICS

Common Name: Cape Rush

Botanical Name: Chondropetalum Tectorum

Growth: Height: 2-3 Spread: 3-4

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Brown

Pests:

Other Factors:

SHRUB CHARACTERISTICS

Common Name: Colorado Gold Treasure Flower

Botanical Name: Gazania Linearis 'Colorado Gold'

Growth: Height: 0.5 Spread: 1

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Yellow

Pests: Powdery mildew, bacterial leaf spot, fungal spots, crown rots, mealybugs

Other Factors:

SHRUB CHARACTERISTICS

Common Name: Common Boxwood

Botanical Name: Buxus Sempervirens

Growth: Height: 15-20 Spread: 15-20

Shape: Rounded

Color:

Fall Color	Flower Color
N/A	Yellow

Pests: Psyllid, Scales and Spider Mites, Phytophthora and Root Rot.

Other Factors: Allergy and Irritant Health Hazard, Ingestion may cause upset stomach.

SHRUB CHARACTERISTICS

Common Name: Creeping Fig

Botanical Name: Ficus Pumila

Growth: Height: up to 30' Spread: N/A

Shape: Spreading

Color:

Fall Color	Flower Color
N/A	N/A

Pests:

Other Factors: Parts are poisonous

SHRUB CHARACTERISTICS

Common Name: Creeping Juniper

Botanical Name: Cupressanceae "Wiltonii"

Growth: Height: 6 Spread: 8

Shape: Spreading

Color:

Fall Color	Flower Color
N/A	N/A

Pests:

Other Factors:

SHRUB CHARACTERISTICS

Common Name: Creeping Raspberry

Botanical Name: Rubus Pentalobus 'Golden Quilt'

Growth: Height: 0.5-1 Spread: 0.5-1

Shape: Rounded

Color:

Fall Color	Flower Color
Red	White

Pests:

Other Factors: New growth is yellow, and later fades to green.

SHRUB CHARACTERISTICS

Common Name: Creeping Rosemary

Botanical Name: Rosmarinus Prostratus

Growth: Height: 1-2 Spread: 2-3

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Blue

Pests: Spittle bugs, brown scale and rosemary leaf beetle

Other Factors:

SHRUB CHARACTERISTICS

Common Name: Dara's Choice Sage

Botanical Name: Salvia 'Dara's Choice'

Growth: Height: 1.5-3 Spread: 3-6

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Blue

Pests: Aphids on new growth and powdery mildew.

Other Factors:

SHRUB CHARACTERISTICS

Common Name: Douglas Iris

Botanical Name: Iris Douglasiana

Growth: Height: 1-2 Spread: 2-3

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Purple

Pests:

Other Factors:

SHRUB CHARACTERISTICS

Common Name: Fraser Photinia

Botanical Name: Photinia x Fraseri

Growth: Height: 8-12 Spread: 8-12

Shape: Rounded

Color:

Fall Color	Flower Color
N/A	White

Pests: Mites, Scales, Aphids and Caterpillars, Fire Blight and Leaf Spot, Aphids, Sooty Mold

Other Factors: Some varieties of Photinia are toxic due to the presence of cyanogenic glycosides in the foliage and fruit.

SHRUB CHARACTERISTICS

Common Name: Hair Grass

Botanical Name: Deschampisa Cespitosa

Growth: Height: 2-5 Spread: 1

Shape: N/A

Color:

Fall Color	Flower Color
N/A	White

Pests: Ergot, several rusts, stripe smut, blind seed, aphids, billbugs, leafhoppers.

Other Factors:

SHRUB CHARACTERISTICS

Common Name: Heavenly Bamboo

Botanical Name: Nandina Domestica

Growth: Height: 8 Spread: 6

Shape: N/A

Color:

Fall Color	Flower Color
N/A	White

Pests:

Other Factors:

SHRUB CHARACTERISTICS

Common Name: Island Alumroot

Botanical Name: Heuchera Maxima

Growth: Height: 1-3 Spread: 1-3

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Pink/White

Pests:

Other Factors:

SHRUB CHARACTERISTICS

Common Name: Newport Dwarf

Botanical Name: Escallonia

Growth: Height: 3-15 Spread: 3-15

Shape: N/A

Color:

Fall Color	Flower Color
N/A	White, Red, or Pink

Pests: Chinese wax scale, oak root fungus.

Other Factors:

SHRUB CHARACTERISTICS

Common Name: San Miguel Island Buckwheat / Red Buckwheat

Botanical Name: Eriogonum Grande Var. Rubescens

Growth: Height: 1-2 Spread: 2-3

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Pink

Pests: Root fungi in damp soils.

Other Factors:

SHRUB CHARACTERISTICS

Common Name: Turkish Sage / Jerusalem Sage

Botanical Name: Phlomis Russeliana

Growth: Height: 1-2 Spread: 4-5

Shape: N/A

Color:

Fall Color	Flower Color
N/A	Yellow

Pests:

Other Factors:

CONTRA COSTA
CLEAN WATER
PROGRAM

The following information has been modified for the use of the

City of San Pablo Master Landscape Plan.

STORMWATER C.3 GUIDEBOOK

Stormwater Quality Requirements for Development Applications

6th Edition
February 15, 2012
Visit www.cccleanwater.org for updates.

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6TH EDITION —FEBRUARY 15, 2012

Grasses and Grass-like Plants

Scientific name Common name	Light Preference			Size (feet)		Watering				Tolerates				CA Native	Other Notes
	Sun	Part	Shade	Ht.	Width	L	M	H	Summer	Heat	Coast	Flood	Wind		
Bromus carinatus California brome				2	1				ok				✓	✓	
Carex densa dense sedge	✓			1	1		✓	✓	✓	✓		✓		✓	
Carex obnupta slough sedge	✓			2	1		✓	✓	✓	✓	✓	✓	✓	✓	
Carex praegracilis clustered field sedge	✓	✓		1.5	1.5		✓	✓	✓	✓	✓	✓	✓	✓	
Carex subfusca rusty sedge	✓	✓		1	1		✓		ok	✓	✓	✓	✓	✓	Great for swales
Carex divulsa Berkeley sedge		✓	✓	1	1		✓		ok		✓	✓	✓	✓	AKA *Carex tumulicola*,. Full sun along coast.
Deschampsia cespitosa tufted hairgrass	✓			2	1		✓		ok			✓	✓	✓	Can look weedy
Distichlis spicata salt grass	✓			0.3	3		✓	✓	✓	✓	✓	✓	✓	✓	Looks like bermuda grass, withstands foot traffic, for soils with high salt
Eleocharis palustris creeping spikerush	✓			1	1		✓	✓	ok	✓	✓	✓	✓	✓	
Elymus glaucus blue wildrye	✓			1.5	2		✓	✓	ok	✓	✓	✓	✓	✓	good for grazing, difficult to mow, messy looking lawn
Festuca californica California fescue	✓	✓	✓	2	2	✓			ok	✓	✓		✓	✓	
Festuca idahoensis Idaho fescue	✓	✓		1	1	✓	✓		ok	✓	✓		✓	✓	Can mow. Needs light summer water at hot sites
Festuca rubra red fescue	✓	✓		1	1.5	✓	✓		ok	✓	✓	✓	✓	✓	Can mow. Lawn alternative
Festuca rubra 'molate' molate fescue	✓	✓		1	1.5	✓	✓		ok	✓	✓		✓	c	Can mow. Lawn alternative
Hordeum brachyantherum	✓	✓		1.5	1		✓	✓	ok	✓	✓		✓	✓	

meadow barley															
Juncus patens blue rush	✓			2	1		✓	✓	✓	✓		✓		✓	
Leymus triticoides creeping wildrye	✓	✓		3	1	✓	✓		ok	✓	✓	✓	✓	✓	Can mow. Recommended for swales.
Melica californica California melica	✓	✓		1	1	✓				✓			✓	✓	
Melica imperfect melic	✓	✓		1	1	✓			ok		✓	✓		✓	Part shade inland, light water in Summer to keep green or goes dormant
Muhlenbergia rigens deergrass	✓			3	3	✓	✓		ok	✓		✓		✓	
Nasella pulchra purple needlegrass	✓	✓		2	1	✓	✓		ok	✓		✓	✓	✓	
Nassella lepida foothill needlegrass	✓	✓	✓	1.5	1	✓	✓		ok	✓	✓		✓	✓	
Phalaris californica California canarygrass		✓	✓	1.5	1		✓	✓	ok		✓	✓	✓	✓	Can be aggressive spreader

Plant Recommendations for Bioretention Facilities and Planter Boxes

Herbaceous Perennials and Groundcovers

Scientific name Common name	Light Preference			Size (feet)		Watering				Tolerates				CA Native	Other Notes
	Sun	Part	Shade	Ht.	Width	L	M	H	Summer	Heat	Coast	Flood	Wind		
Achillea millefolium common yarrow	✓			1.5	1	✓			ok	✓				✓	Good for hot sites
Arctostaphylos hookeri Monterey manzanita	✓	✓		1	4	✓	✓		ok		✓		✓	✓	Better in part shade in hot sites
Arctostaphylos uva-ursi kinnick-kinnick	✓	✓		1	15	✓	✓		ok		✓		✓	✓	Full sun at coast, part shade inland. Cultivars to try include 'emerald carpet,' 'Point Reyes,' 'San Bruno Mountain' depending on site
Epilobium canum California fuchsia	✓	✓		1	4	✓			ok					✓	
Eriogonum fasciculatum flattop buckwheat	✓			3	4	✓				✓				✓	
Eschscholzia californica California poppy	✓			1	1	✓			ok	✓	✓	✓	✓	✓	
Fragaria chiloensis beach strawberries	✓	✓	✓	0.3	2	✓			ok		✓			✓	
Gazania spp. treasure flower	✓			0.5	2	✓	✓		✓	✓			✓		
Iris douglasiana Douglas iris	✓	✓		1.5	2	✓	✓		ok	✓			✓	✓	Also, Iris hybrids

Plant Recommendations for Bioretention Facilities and Planter Boxes

Scientific name / Common name	Light Preference			Size (feet)		Watering				Tolerates				CA Native	Other Notes
	Sun	Part	Shade	Ht.	Width	L	M	H	Summer	Heat	Coast	Flood	Wind		
Lotus scoparius deerweed	✓			4	3	✓				✓		✓		✓	
Lupinus bicolor miniature lupine	✓			1	1	✓					✓	✓		✓	Adds nitrogen
Mimulus aurantiacus common monkeyflower	✓	✓		3	3	✓			ok			✓		✓	
Mimulus cardinalis scarlet monkeyflower	✓	✓	✓	3	3	□	✓	✓	✓			✓		✓	Aggressive seeder
Prunella vulgaris self heal	✓	✓				✓	✓		ok		✓	✓	✓	✓	
Rudebeckia californica California coneflower	✓			3	2	✓	✓		ok	✓		✓		✓	
Sisyrinchium bellum blue eyed grass				1	1	✓			ok	✓	✓	✓	✓	✓	
Sisyrinchium californicum yellow eyed grass	✓	✓		1	1		✓		✓	✓	✓	✓	✓	✓	
Solidago californica California goldenrod		✓		3	2	✓	✓		ok	✓		✓		✓	

Small Shrubs

Scientific name / Common name	Light Preference			Size (feet)		Watering				Tolerates				CA Native	Other Notes
	Sun	Part	Shade	Ht.	Width	L	M	H	Summer	Heat	Coast	Flood	Wind		
Artemisia californica California sagebrush	✓			2-5	4-5	✓				✓	✓		✓	✓	Will not tolerate sprinklers
Cistus skanbergii hybrid rockrose	✓			3	5	✓	✓		✓	✓	✓	✓	✓		Best with annual shearing
Erigeron glaucus seaside daisy	✓			1	1.5				ok		✓			✓	
Eriogonum crocatum saffron buckwheat	✓			1.5	1.5	✓				✓	✓		✓	✓	
Eriogonum umbellatum sulfur buckwheat	✓			0.7	3	✓			ok	✓			✓	✓	
Mahonia pinnata California holly grape	✓	✓	✓	4	4	✓	✓			✓		✓	✓	✓	
Mahonia repens creeping Oregon grape	✓	✓		2	3	✓	✓		ok		✓	✓		✓	
Rubus ursinus California blackberry		✓	✓	3	5		✓	✓	ok	✓	✓	✓	✓	✓	Thorns. Harbors beneficial insects
Symphorocarpos albus common snowberry	✓	✓	✓	4	4	✓	✓	✓	ok	✓				✓	Adaptable to many conditions
Whipplea modesta whipplevine		✓	✓	0.5	3		✓	✓	✓		✓	✓		✓	Sunset zones 16-17, 19-24 only (not recommended E. Contra Costa), best for moist shady spots

Plant Recommendations for Bioretention Facilities and Planter Boxes

Large Shrubs

Scientific name Common name	Light Preference			Size (feet)		Watering				Tolerates				CA Native	Other Notes
	Sun	Part	Shade	Ht.	Width	L	M	H	Summer	Heat	Coast	Flood	Wind		
Carpenteria californica Bush anemone	✓	✓		6	4	✓	✓		✓	✓				✓	Interior climate with occasional water otherwise low water needs
Ceanothus spp. Various ceanothus	✓	✓		varies	varies	✓			☐	✓			✓	✓	fast-growing but short-lived
Cercis occidentalis western redbud	✓			12	8	✓			☐	✓		✓	✓	✓	Prune low branches for small tree form, susceptible to disease if overwatered
Eriogonum arborescens Santa Cruz Island buckwheat	✓			3	5	✓			✓	✓	✓	✓	✓	✓	Low water after second year

Plant Recommendations for Bioretention Facilities and Planter Boxes

Scientific name Common name	Light Preference			Size (feet)		Watering				Tolerates				CA Native	Other Notes
	Sun	Part	Shade	Ht.	Width	L	M	H	Summer	Heat	Coast	Flood	Wind		
Eriogonum giganteum St. Catherines lace	✓			5	6	✓			☐		✓	✓	✓	✓	best at coast, tolerant of unwatered inland garden
Fremontodendron californicum flannel bush	✓			20	14	✓			☐	✓		✓		✓	Fast-growing, short-lived
Garrya elliptica Coast silktassel	✓	✓		8	8	✓	✓		✓	✓		✓	✓	✓	'Evie' is compact variety
Heteromeles arbutifolia toyon	✓	✓	✓	7	5	✓	✓		✓	✓	✓	✓		✓	Doesn't respond well to pruning low branches
Juniperus chinensis 'Mint Julep" mint julep juniper	✓	✓		3	6	✓	✓		✓	✓	✓	✓	✓		
Lonicera hispidula California honeysuckle	✓	✓	✓	4	2		✓	✓	✓		✓	✓		✓	Climbing vine-like. Best in part shade. Attracts birds
Lonicera involucrate twinberry honeysuckle	✓	✓	✓	6	3		✓	✓	✓		✓	✓		✓	Best in part shade. Attracts birds
Physocarpus capitatus Pacific ninebark	✓	✓		5	5	✓	✓	✓	ok		✓	✓		✓	Part shade and summer water required in hot locations
Prunus illicifolia holly leaf cherry	✓	✓		15	15	✓	✓			✓	✓	✓	✓	✓	
Prunus lyonii Catalina cherry	✓	✓		15	15	✓	✓			✓	✓	✓	✓	✓	
Rhamnus californica California coffeeberry	✓	✓		3-15	6	✓			✓	✓		✓	✓	✓	'Eve Case' is compact with broad foliage
Rhus integrifolia	✓	✓		8	6	✓			✓	✓			✓	✓	Shear to hedge if desired

lemonade berry															
Ribes malvaceum chaparral currant	✓	✓		5	5	✓	✓		ok	✓				✓	
Ribes sanguineum flowering currant		✓	✓	5-12	5-12	✓	✓		✓	✓	✓	✓		✓	Needs good air movement to avoid white fly
Ribes speciosum fuchsia-flowered gooseberry	✓	✓	✓	3-6	3-6	✓	✓		✓	✓	✓	✓		✓	
Rosa californica California wild rose	✓	✓		3	3-6		✓	✓	ok	✓	✓	✓	✓	✓	hooked thorns not compatible with foot traffic
Rosa gymnocarpa wood rose	✓	✓		2	3		✓		ok	✓	✓	✓		✓	
Vitis californica California grape	✓	✓		10	2-10	✓	✓		✓	✓	✓	✓	✓	✓	Climbing vine. Best in full sun. Can be aggressive in moist area.
Vitis girdiana desert grape	✓			8	2-11	✓	✓		✓	✓		✓	✓	✓	Climbing vine. May be more suited to biofilter soils than californica.

Small Trees

Scientific name	**Light Preference**			**Size (feet)**		**Watering**				**Tolerates**				**CA**	
Common name	**Sun**	**Part**	**Shade**	**Ht.**	**Width**	**L**	**M**	**H**	**Summer**	**Heat**	**Coast**	**Flood**	**Wind**	**Native**	**Other Notes**
Acer Negundo box elder	✓	✓	✓	30	30	✓	✓		ok	✓	✓	✓	✓	✓	Tough shade tree, deciduous
Arctostaphylos manzanita common manzanita	✓			6-15	8-12	✓				✓			✓	✓	Prune to be small tree. "Dr. Hurd" is more tolerant of summer water.
Cercis occidentalis western redbud	✓	✓		12	8	✓				✓			✓	✓	Prune low branches for small tree form; susceptible to disease if overwatered.
Fraxinus dipetala California ash	✓	✓		20	20				ok	✓		✓		✓	

Plant Recommendations for Bioretention Facilities and Planter Boxes

Scientific name Common name	Light Preference			Size (feet)		Watering				Tolerates				CA Native	Other Notes
	Sun	Part	Shade	Ht.	Width	L	M	H	Summer	Heat	Coast	Flood	Wind		
Fraxinus latifolia Oregon ash	✓	✓	✓	30	25	✓			✓	✓	✓	✓		✓	
Pinus thumbergiana Japanese black pine	✓	✓		25	20	✓			✓	✓	✓			✓	Asymmetrical, often leaning habit
Prunus ilicifolia holly leaf cherry	✓	✓		15	15	✓	✓			✓	✓		✓	✓	
Prunus lyonii Catalina cherry	✓	✓		15	15	✓	✓			✓	✓		✓	✓	

DRIP IRRIGATION

If a landscaped are is to be replanted the area must be converted to drip irrigation prior to the installation of any plant material. This does not apply to turf areas.

If a project calls for installation of a new landscape areas, it must be designed to use drip irrigation.

ACCEPTABLE DRIP IRRIGATION COMPONENTS:

1. Backflow Devices: A.R.I. RP-500 series must be used.
2. Nelson irrigation inline pressure regulator (30PSI)
3. Netafim “Techline” or Hunter PLD irrigation drip lines installed per manufactures recommendation.
4. Hunter ICV valves.
5. Hunter ICZ valve and filter combination sets are acceptable for drip irrigation.
6. “Y” Strainer Amiad or Hunter brand with removable stainless steel mesh filters **(nylon mesh filters are NOT acceptable)**.
7. Netafim Automatic Flush Valves Model TL050MFV-1
8. Valve boxes: Carson-Brooks 1419 boxes with locking bolt covers shall be used.
9. Quick-Coupler and wire junction boxes: Carson-Brooks 9” Round boxes with locking bolt covers shall be used.
10. Rain Bird 33DRC Quick coupler. Placed next to each zone valve manifold.
11. Backflow Device Covers: Guardshack GS-1 or GS-2 models shall be used depending on size of backflow device. Power-coated green finish is used.
12. All lines must be pinned with 6”X1”X6” 11-guage landscape pins every 2’.

GENERAL TREE PLANTING GUIDE

The follow is a general guide for the purpose of promoting an acceptable condition for the starting of a street tree. Not all conditions will allow complete adherence, but it will imperative these guide lines be followed as closely as possible.

PLANTING HOLE:

The planting hole should be excavated 2 inches less than the height of the root ball and twice the diameter, or to a diameter which will accept a root barrier designed for the size of the root ball. When planting in an area surrounded by concrete where a tree grate is to be used, follow the 'Tree Frame/Grate Standard Detail Sheet Specifications.

TREE PLACEMENT:

The tree should be carefully removed from the container to avoid breaking apart the root ball. Remove matted or circling roots on the surface of the root ball and scarify to allow better contact with the backfill soil. Place tree in center of planting hole, and orient the tree with the strongest branches facing the prevailing winds.

SOIL PREPARATION, IRRIGATION AND FERTILIZER:

Back fill hole one third using native soil with no more than 20% amendment additive. Soak soil to settle. Add 2 tree fertilizer tabs (20-10-5 formulation) for 15 gallon trees and 3 tabs for larger trees. Back fill to two thirds with native soil and soak again. As the last third of soil is added, continue to wet and fill to top of root ball.

TREE STAKING:

Two 2 inch by 2 inch stakes are to be driven into the ground on each side of the root ball, parallel to the street, and slightly off center of the planting hole to the street side. Stakes should be no higher than the bottom branches to be saved.

Six inches above the point of the tree, where if held by the hand, the tree will stay in an upright position, is where the first set of trees ties will be placed. The tree ties will be of rubber and will tie in this manner; nail one end of the tie to a stake, go around the tree on the opposite side from where nailed, across beneath the tie between stake and tree and nail end of tie to opposite side of stake. This forms a crossed loop from stake to tree. Repeat this process on the other stake.

Half the distance from ground to first set of ties is where the second set of ties are to be placed, using the same method as the first set. Support is now complete and if the tree is supported well, the nursery stake can now be removed.

MULCHING:

An organic mulching material about 2 to 3 inches thick will aid in soil retention of water, except in the case of planting where a tree grate is being used, a 2" to 3" inch layer of ¾" to 1" rock will be used in place of organic mulch.

NOTE:

Periodic watering and filling the deep water tubes in the root barrier will insure survival of the tree and promote deep rooting to retard damage to sidewalks and curbs.

C3 BIOSWALE PLANTING GUIDE

The follow is a general guide for the purpose of promoting an acceptable condition for the starting of a tree/shrub in a bio-retention facility (bioswale). Not all conditions will allow complete adherence, but it will imperative these guide lines be followed as closely as possible.

PLANTING HOLE:

The planting hole should be followed as explained in the "Tree Planting Guide" or "Shrub Planting Guide."

TREE/SHRUB PLACEMENT:

The tree/shrub should be carefully removed from the container to avoid breaking apart the root ball. Remove matted or circling roots on the surface of the root ball and scarify to allow better contact with the backfill soil. Place tree/shrub in center of planting hole, and for trees orient the tree with the strongest branches facing the prevailing winds. Trees in Bioswales should be placed away from the location of the underdrain.

SOIL PREPARATION & IRRIGATION (NO FERTILIZER):

Back fill hole one third using native soil and the required soil loamy sand mix, for bioswales. The soil must maintain a minimum percolation rate of 5" per hour throughout the life of the facility. Soak soil to settle. No fertilizer is to be used in Bioswales, compost tea may be used. Back fill to two thirds with soil and soak again. As the last third of soil is added, continue to wet and fill to top of root ball.

TREE STAKING:

Tree staking should be followed as explained in the "Tree Planting Guide."

MULCHING:

An organic mulching material about 1 to 2 inches (3 inches maximum) thick will aid in soil retention of water. Ensure that the top of mulch is 6 inches below the top of the overflow structure.

NOTE:

Periodic watering and filling the deep water tubes in the root barrier will insure survival of the tree and promote deep rooting to retard damage to sidewalks and curbs.

The recommended C.3 plants were selected for the following characteristics:

- Adaptation to Contra Costa's climate
- Drought tolerance
- Adaptation to well-drained soils
- Adaptation to low soil fertility
- Allow infiltration
- Are not invasive weeds
- Do not have aggressive roots

The list is not comprehensive, nor will all these species succeed at every site. Selection for a particular site should be done by experienced professionals familiar with the plants and site conditions. Also, note that bioretention soils have a high infiltration rate and require a different irrigation system design than what is typically used for heavy clay soils in Contra Costa County. Irrigation systems must be designed to minimize water use, avoid overwatering, and prevent the underdrain discharges during dry weather.

STREET TREE PLACEMENT GUIDE

SIDEWALKS: (Fully Paved Areas)

At least 4ft clearance should be maintained between either the edge of an uncovered tree well or from the tree grate hole to the property line, or where a tree is to be planted near the property line, 6ft depending on trees pp and sidewalk width. In addition, ¾" rebar in sidewalk around the tree space.

TREE LOCATIONS AND SPACING CONSIDERATION:

1. Minimum distances for the following are to be observed;

Utility boxes	10-15ft
Manhole and other utility vaults	5ft
Telephone and other utility poles	5ft
Gas and Water meters and mains	5ft
Fire Hydrants	15ft
Driveway cuts	10ft
Between Trees	25-30ft (depending on species)

2. Parking;

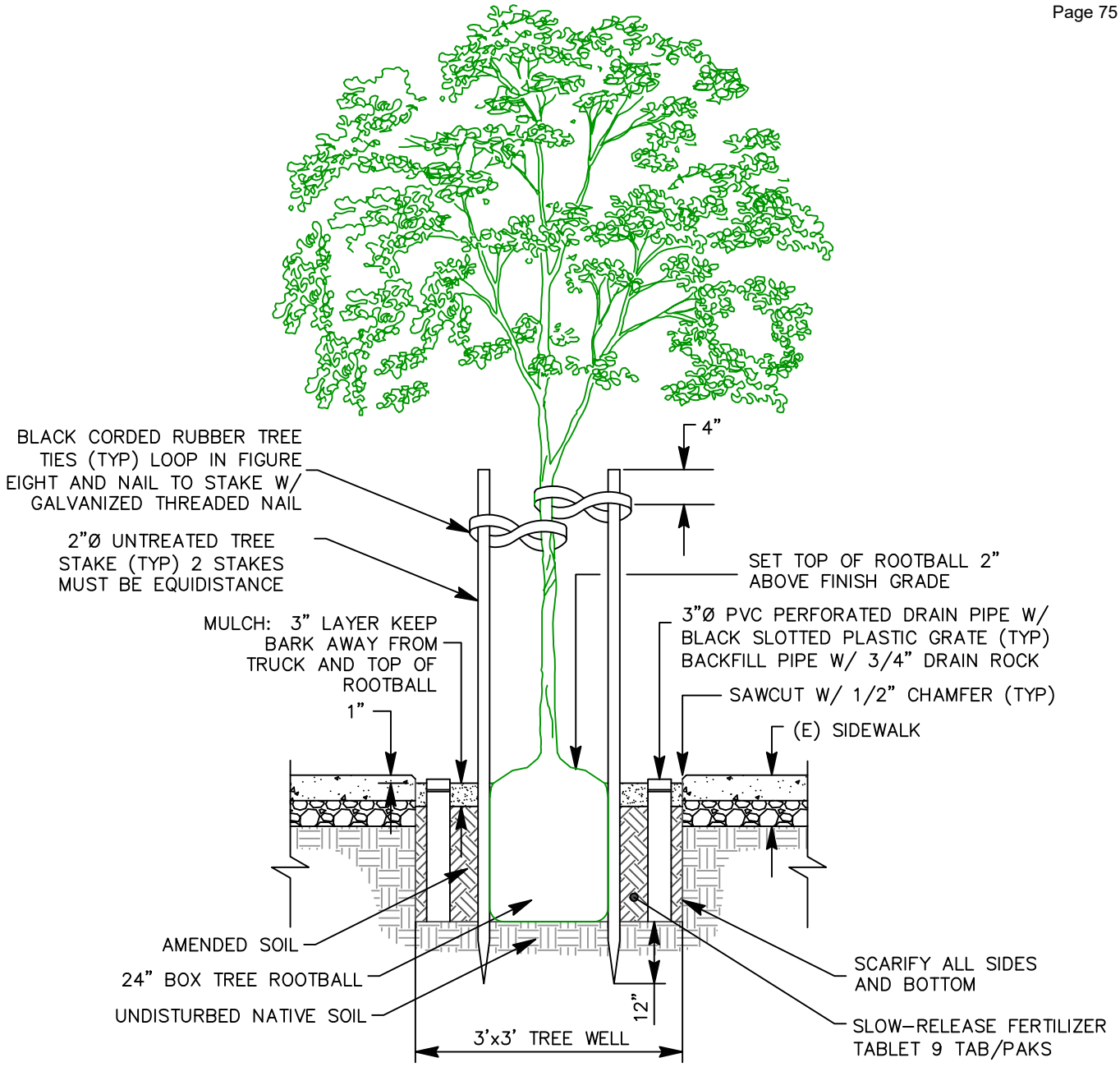
   To prevent damage from vehicles at parking spaces, trees should be aligned parallel to the edge of street side parking space boundaries. Trees should be planted a minimum of 2ft from the face of curb.

3. Intersections;

   Trees should be placed no closer than 30ft from the center of the curb return at an intersection to ensure visibility from all directions.

4. Miscellaneous;

   Other public improvement such as street lights, stop signs and bus stops should be considered on a case by case basis when locating a street tree.



TREE WELL DETAIL
NTS

NOTE:

1. HOLE WIDTH IS DEPENDENT UPON SPECIES OF TREE IS MATURE DIAMETER. SIX INCHES TO 12 INCHES ADDITIONAL WIDTH BEYOND DIAMETER OF MATURE TREE IN DIRECTION PERPENDICULAR TO SIDEWALK 2 TIMES MATURE FROM CENTER OF HOLE WIDTH ON EACH SIDE OF TREE IN ADDITION OF MATURE DIAMETER, PARALLEL TO SIDEWALK
2. MINIMUM 39" SIDEWALK WIDTH

No	By	Revision	Date
1	LS	ADDED NOTE PER BW	4/17

CITY OF SAN PABLO

13831 SAN PABLO AVE. SAN PABLO, CA 94806
TEL: (510) 215-3030 FAX: 215-3031

CITY OF SAN PABLO
City of New Directions

Checked By: _____

Approved By:

_____ _____
PUBLIC WORKS DIRECTOR DATE

TREE WELL

SHEET 1 OF 1 NOT TO SCALE

STD DET:
SH-01

PRUNING YOUNG TREES

All pruning shall comply with ANSI A-300

Proper pruning is essential in developing a tree with a strong structure and desirable form. Trees that receive the appropriate pruning measures while they are young will require little corrective pruning when they mature. Assuming that the proper trees have been selected for each site, pruning young trees to improve branch structure is the most effective method of reducing maintenance costs as trees mature. At the time of planting, the only pruning that should be done is the removal of broken or dead branches. In the second growing season, minor pruning can be performed to remove branches with poor attachments. In subsequent years, selective pruning should be performed to achieve the proper spacing of branches.

Keep these few simple principles in mind before pruning a tree:

• Each cut has the potential to change the growth of the tree. Always have a purpose in mind before making a cut.

• Proper technique is essential. Poor pruning can cause damage that lasts for the life of the tree. Learn where and how to make the cuts before picking up the pruning shears.

• Trees do not heal the way people do. When a tree is wounded, it must grow over and compartmentalize the wound. As a result, the wound is contained within the tree forever.

• Small cuts do less damage to the tree than large cuts. For that reason, proper pruning (training) Of young trees is critical. Waiting to prune a tree until it is mature can create the need for large cuts that the tree cannot easily cover.

• The belief that trees should be pruned when planted to compensate for root loss is misguided. Trees need their leaves and shoot tips to provide food and the substances that stimulate new root production. Unpruned trees establish foster and with a stronger root system than trees pruned at the time of planting.

Making the Cut

Where a tree care worker makes a pruning cut is critical to a tree's response in growth and wound closure. For these reasons it is important to make pruning cuts just outside the branch collar. Because the branch collar contains trunk or parent branch tissues, the tree will be damaged unnecessarily if you remove or damage the branch collar. In fact, if the cut is large, the tree may suffer permanent internal decay from an improper pruning cut.

If a permanent branch is to be shortened, cut it back to a lateral branch or bud. Internodal cuts, or cuts made between buds or branches, may lead to stem decay, sprout production, and misdirected growth.

Pruning Tools

When pruning trees, it is important to have the right tool for the job. For small trees, most of the cuts can be made with hand pruning shears (secateurs). The scissor-types, or bypass blade hand pruners, are preferred over the anvil type because they make cleaner, more accurate cuts. Cuts larger than one-half inch in diameter should be made with lopping shears or a pruning saw. Never use hedge shears to prune a tree. Whatever tool tree care workers use, make sure it is kept clean and sharp.

Establishing a Strong Scaffold Structure

A good structure of primary scaffold branches should be established while the tree is young. The scaffold branches provide the framework of the mature tree. Properly trained young trees will develop a strong structure that requires less corrective pruning as they mature.

The goal in training young trees is to establish a strong trunk with sturdy, well-spaced branches. The strength of the branch structure depends on the relative sizes of the branches, the branch angles, and the spacing of the limbs. Naturally, those factors vary with the growth habit of the tree. Pin oaks and sweetgums, for example, have a conical shape with a central leader. Elms and live oaks are often wide-spreading without a central leader. Other trees, such as Lindens and Bradford pears, are densely branched. Good pruning techniques remove structurally weak branches while maintaining the natural form of the tree.

Trunk Development

For most young trees, it is important to maintain a single dominant leader growing upward. Do not prune back the tip of this leader, and do not allow secondary branches to outgrow the leader. Sometimes a tree will develop double leaders known as co-dominant stems. Co-dominant stems can lead to structural weaknesses, so it is best to remove one of the stems while the tree is young.

The lateral branches growing on the sides contribute to the development of a sturdy, well-tapered trunk. It is important to leave some of these lateral branches in place initially, even though they may be pruned out later. These branches, known as temporary branches, also help protect the trunk from sun and mechanical injury, while reducing the need for fertilizing (more leaf area means more photosynthesis). Temporary branches should be kept short enough so that they do not obstruct or compete with selected permanent branches.

Permanent Branch Selection

The strategy for training a young tree depends on its primary function in the landscape. Low branches, for example, often make a tree appear well-proportioned when young, but they are seldom appropriate for large-growing trees in an urban environment. Street trees must be pruned so that they allow at least 14’ over roadways (15' if State

Highway) of clearance for traffic, but most landscape trees require only about 8 feet of clearance. 15' is preferred in commercial area to avoid blocking street signs.

Newly planted trees should keep their lower temporary branches intact for as long as possible, although they make the tree look a bit unruly, temporary branches and staking (due to tapered caliper) should be maintained for at least the first year.

The vertical and radial spacing of branches is very important. Branches selected as permanent scaffold branches must be well spaced along the trunk. Further, radial spacing of branches growing outward in each direction should be balanced. good rule of thumb for the vertical spacing of permanent branches is to maintain a distance equal to 3% of the tree's eventual height. Thus, a tree that will be 50 feet tall should have permanent scaffold branches spaced about 18 inches apart along the trunk. Avoid allowing two scaffold branches to grow one above the other on the same side of the tree.

Some trees have a tendency to develop branches with narrow angles of attachment and tight crotches. As the tree grows, bark can become enclosed deep within the crotch between the branch and the trunk. Such growth, called "included bark," weakens the attachment of the branch to the trunk and can lead to branch failure when the tree matures. Tree care workers should prune branches with weak attachments while they are young.

Avoid over-thinning the interior of the tree. The leaves of each branch must manufacture enough food to keep that branch alive and growing. In addition, each branch must contribute food to nurture the trunk and roots. Removal of too many leaves can "starve" the tree, reduce growth, and make the tree unhealthy. A good rule of thumb is to maintain at least half the foliage on branches growing in the lower two-thirds of the tree.

PRUNING MATURE TREES

Pruning is the most common tree maintenance procedure. Although forest trees grow quite well with only nature's pruning, landscape trees require a higher level of care to maintain their safety and esthetics. Pruning should be done with an understanding of how the tree responds to each cut. Improper pruning can cause damage that will last for the life of the tree, or worse, shorten the tree's life.

Reasons for Pruning

Because each cut has the potential to change the growth of the tree, no branch should be removed without a valid reason. Common reasons for pruning are to remove dead branches, to remove crowded or rubbing limbs, and to eliminate safety concerns, trees may also be pruned to increase light and air penetration to the inside of the tree's crown. In most cases, mature trees are pruned as a corrective or preventive measure.

Routine thinning does not necessarily improve the health of a tree. Trees produce a dense crown of leaves to manufacture the sugar used as energy for growth and

development, so removal of foliage through pruning can reduce growth and stored energy reserves. Heavy pruning can be a significant health stress for the tree.

Yet if people and trees are to coexist in an urban or suburban environment, we sometimes have to modify the trees. Safety is a major concern, as well as esthetics—we want trees to complement other landscape plantings and lawns. Proper pruning, done with a clear understanding of tree biology, can maintain good tree health and structure while enhancing the esthetic and economic values of our landscapes.

When to Prune

Most routine pruning to remove weak, diseased, or dead limbs can be accomplished at almost any time during the year with little effect on the tree. However, growth is maximized and wound closure is fastest if pruning takes place before the spring growth flush. Some trees, such as Maples and Birches, tend to “bleed" if pruned early in the spring. It may be unsightly, but it is of little consequence to the tree.

Heavy pruning just after the spring growth flush should be avoided. At that time, trees have just expended a great deal of energy to produce foliage and early shoot growth, so removal of a large percentage of foliage can stress the tree.

A few tree diseases, such as oak wilt, can be spread when pruning wounds allow spores access into the tree. Susceptible trees should not be pruned during active transmission periods.

Making Proper Pruning Cuts

Pruning cuts should be made just outside the branch collar. The branch collar contains trunk or parent branch tissue that should not be damaged or removed. If the trunk collar has grown out on a dead limb that is to be removed, make the cut just beyond the collar—do not cut the collar.

If a large limb is to be removed, its weight should first be reduced in order to avoid tearing the bark. This is done by making an undercut about 12 to 18 inches from the limb's point of attachment. Make a second cut from the top, directly above or a few inches farther out on the limb. Doing so removes the limb, leaving the 12 to 18-inch stub. Remove the stub by cutting back to the branch collar.

Pruning Techniques

Specific types of pruning may be necessary to maintain a mature tree in a healthy, safe, and attractive condition.

Cuts made along a branch should be made at a lateral branch or bud,

• **Cleaning** is the removal of dead, dying, diseased, crowded, weakly attached, and low-vigor branches from the crown of a tree.

• **Thinning** is the selective removal of branches to increase light penetration and air movement through the crown. Thinning opens the foliage of a tree. reduces weight on heavy limbs, and helps retain the tree's natural shape.

• **Raising** removes the lower branches from a tree in order to provide clearance for buildings, vehicles, pedestrians, and vistas.

• **Reduction** reduces the size of a tree, often to ensure clearance for utility lines. Reducing the height or spread of a tree is best accomplished by pruning back the leaders and branch terminals to lateral branches that are large enough to assume the terminals roles (i.e., at least one-third the diameter of the cut stem). Reduction is preferable to topping, as it helps maintain the form and structural integrity of the tree.

How Much Should Be Pruned?

The amount of live tissue that should be removed depends on the tree size, species, and age, as well as the pruning objectives. Younger trees tolerate the removal of a high percentage of living tissue better than mature trees do. An important principle to remember is that a tree can recover from several small pruning wounds faster than from one large wound.

A common mistake is to remove too much inner foliage and small branches. It is important to maintain an even distribution of foliage along large limbs and in the lower portion of the crown. Over-thinning reduces the tree's sugar production capacity and can create tip-heavy limbs that are prone to failure.

Mature trees should require little routine pruning. A widely accepted rule of thumb is never to remove more than one-quarter of a tree's leaf-bearing crown, though pruning even that much could have negative effects on a mature tree. The older and larger a tree becomes, the less energy it has in reserve to close wounds and defend against decay or insect attack. Removing even a single large-diameter limb can create a wound that the tree may not be able to close. The pruning of large, mature trees is therefore usually limited to removal of dead or potentially high risk limbs.

Wound Dressings

Wound dressings were once thought to accelerate wound closure, protect against insects and diseases, and reduce decay. However, research has shown that dressings do not reduce decay or speed closure, and they rarely prevent insect or disease infestations. Most experts recommend that wound dressings not be used.

Pruning Mature Trees

Pruning is the most common tree maintenance procedure next to watering. Pruning is often desirable or necessary to remove dead, diseased, or insect-infested branches and to improve tree structure, enhance vigor, or maintain safety, because each cut can change the growth of, or cause damage to a tree, no branch should be removed without a valid reason.

Removing foliage from a tree has two distinct effects on its growth: reducing photosynthesis and possibly reducing overall growth. Consequently, pruning should always be performed sparingly. Over pruning is extremely harmful because without enough leaves, a tree cannot gather and process enough sunlight to survive.

However, the growth that does occur after pruning takes place on fewer shoots, so they tend to grow longer than they would without pruning. Understanding how the tree responds to pruning should assist tree care workers when selecting branches for removal.

Pruning mature trees requires special equipment, training, and experience. If the pruning work requires climbing, the use of a chain or hand saw, or the removal of large limbs, then using personal safety equipment such as protective eyewear and hearing protection is a must. Arborists can provide a variety of services to assist in performing the job safely and reducing risk of personal injury and damage to residences and property. They also are able to determine which type of pruning is necessary to maintain or improve the health, appearance, and safety of City street trees.

Big cuts can result in decay and cracks

STREET TREE MAINTENANCE GUIDELINES

1. Trees are to be pruned to develop proper structure, to improve health and vigor by deadwood removal, and for clearance of obstructing branches or foliage for pedestrians, bicycles, and vehicles. The intent of the trimming program is to prune trees for safety and health rather than cosmetic appearance. It is a Public Works Department policy NOT to pollard or top street trees because of the overall negative effect of these practices.
2. The Public Works Department will continue the program of regular street tree pruning and maintenance, where funds are available.
    a. Any tree shall be and the crown reduced by an appropriate amount PRIOR to any severe root pruning unless there is an immediate need to prune the roots Root pruning and limb pruning should not occur in the same year.
    b. Pruning shall take place under the guidance and direction of on arborist or recognized authority.
    c. Pruning shall be done to thin and reduce the crown of any potential problem tree in order to reduce wind load
    d. All tools shall be disinfected if a diseased or infested tree is pruned or removed
3. Utility companies shall operate in a manner to prevent damage to trees. Any person excavating in the public right-of-way shall not cut tree roots exceeding three inches without approval of a city "approved" arborist pruning. if this regulation is not followed, said party may be liable for tree damages and any subsequent damages from tree failure.

MATURE TREE CARE

Tree Inspection

Tree inspection is an evaluation tool that calls attention to any change in the tree's health before the problem becomes too serious. If funding is sufficient by providing regular inspections of mature trees at least once a year, tree maintenance workers and supervisors can prevent or reduce the severity of future disease, insect, and environmental problems. During tree inspection, be sure to examine four characteristics of tree vigor: new leaves or buds, leaf size, twig growth, and absence of crown dieback (gradual death of the upper part of the tree).

A reduction in the extension of shoots (new growing parts), such as buds or new leaves, is a fairly reliable cue that the tree's health has recently changed. To evaluate this factor, compare the growth of the shoots over the past three years and determine whether there is a reduction in the tree's typical growth pattern.

Fertilization

Fertilization may not be necessary for the first growing season unless there are specific nutrient deficiencies. At the beginning of the second growing season, fertilizers can be applied to the root zone. Nitrogen is usually the limiting nutrient for plant growth. Soil analysis, particularly when combined with a foliar analysis, can determine when other elements are in short supply. Slow-release fertilizers applied in autumn will help root growth and will continue providing nutrients the following spring. Mature trees should not be placed on a scheduled fertilization program without a documented need. If soil analyses show a distinct and serious nutrient deficiency, or if the tree's root system or growing area has been damaged or contaminated, then the time and expense of fertilization may be worthwhile to save the tree. A certified arborist can determine if and when public trees need fertilization as well as the appropriate fertilizer formulation and delivery method.

Tree surgery

The requirement and extent of tree surgery should be determined on site by a certified arborist. Where tree surgery is considered necessary, give notice and obtain instructions. All pruning work should be in accordance with the International Society of Arboriculture Standards for Pruning (ANSI-A300).

Cabling and Bracing

Rather than remove or severely prune a mature tree if a structural defect is discovered, the use of structural support can reduce safety risks on a case by case basis. Cabling and bracing are the two most common forms of structural support for trees; other, less common forms of structural support are guying and propping. Structural support is infrequently recommended, but trees with special or historic significance can be spared from removal by using such techniques as cabling and bracing.

Primary Uses of Cabling and Bracing

Prevention: to reduce the chance of failure on a healthy tree with structural weakness (e.g., a specimen oak in good condition but having large limbs with V-crotches).

Restoration: to prolong the existence of a damaged tree (e.g., a large sugar maple that lost one of its leaders in a storm, leaving the others suddenly exposed and vulnerable to further damage).

Mitigation: to reduce the high risk potential of a tree (e.g., a picturesque multi-stemmed hickory that towers over a picnic shelter).

SPECIAL FERTILIZATION AND WATERING

The following are guidelines for providing water, nutrients and companion plants to trees under common soil conditions in San Pablo. It should be noted, however, that trees may exhibit a variety of responses to their surroundings, and regular monitoring is necessary to insure that the tree is receiving the water and nutrients it needs.

Irrigating Trees in Sandy Soil

• Water generously 2 - 3 x per week on slow drip

• 20 gallons a week for first 2 years after planting

• 10 gallons a week for subsequent years

• The water you put in runs through the soil quickly. It travels straight down and does not spread to the side

Therefore, move your water source around in order to get all roots.

Fertilizing Trees in Sandy Soil

• Add high-nitrogen organic fertilizers as needed, up to once per season. Organic fertilizers include fish emulsion, kelp powder and lawn clippings. Don't pile lawn clippings too thick- just sprinkle a thin layer and allow to dry thoroughly. Remember that the soil cannot hold onto these nutrients so don't overdo it, it will just run off.

• Keep a good layer of wood chips and/or compost in the tree basin. Do not pile the mulch up against the tree trunk as this can cause crown rot and kill your tree.

Providing Companion Plants to Trees in Sandy Soil

Plants in the pea and bean family are nitrogen fixers {draw N from air and turn it into a usable form for plants). Other plants growing nearby can benefit from this. Annual plants in this family include:

• Climbing sweet pea (give the sweet pea something else to climb besides the tree!)

• Red clover

• Perennials such as native lupine shrubs

Irrigating Trees in Clay Soil

• Water 10-15 gallons per week with a slow drip

• The heavier the soil, the less water it may need

• Watch to see how fast the water drains and avoid creating a swampy condition. Roots need oxygen as well as water

• Try not to step on, or dig in, the soil when it is wet, because you can squeeze the oxygen out of it

• If clay soil dries out too much, water may just puddle on the surface. Try to keep the soil evenly moist without flooding it

Fertilizing Trees in Clay Soil

• Clay soil holds onto nutrients well, so you don't need to add chemical fertilizer

• Replenish mulch as often as needed to keep o thick layer. Do not pile mulch up against the tree trunk

• There is less of a need to add nitrogen than with sandy soil

Providing Companion Plants to Trees in Clay Soil

Clay soil needs more oxygen, so choose plants with tough roots to break up the clay. Keep them from growing too close to the tree to avoid crown rot.

• Chrysanthemums

• Mints

• Tubers (e.g. Iris)

MATURE STREET TREE MAINTENANCE PROGRAM

An effective maintenance program, including regular inspections and the necessary follow-up care of mulching, fertilizing, and pruning, can detect problems and correct them before they become damaging or fatal. Considering that many tree species can live as long as 200 to 300 years, including these practices when caring for the trees in the City streetscape is an investment that will offer enjoyment and value for generations.

The decision to provide street tree maintenance should be based upon the following factors:

1. Public safety

2. Growth rate and structure of the individual tree

3. Time elapsed since last trimming

4. Geographic location

STREET TREE MAINTENANCE GUIDELINES

1. Department policy is to minimize the use of pesticides and use them only when other methods have failed to control the disease or pests. The City will comply with the Bay Friends Landscape Ordinance with regards to pesticides use.

2. Based upon evaluation by Public Works personnel, the structurally corrective techniques of cabling and bracing may be employed. Roots may be shaved only under the direct supervision of an Arborist or Authorized City Staff.

3. Root pruning is done when tree roots are damaging City-owned infrastructure including sidewalks, curbs, gutters, sewers, and storm drains. The root pruning program aims to mitigate all severe root-caused sidewalk damage. Priority of repair locations will be based on severity of damage and sidewalk traffic use. The following techniques may be used to mitigate infrastructure damage caused by tree roots:

a. **Root prune:** Roots are either pruned by hand or with the aid of a root pruning machine, which can be used 12 to 24 inches below grade on the sidewalk or curbside. Use of the root pruning machine is more cost effective but can result in severing large anchor roots. Root pruning is effective but may need to be repeated on a three-to-four-year cycle to control re-sprouting of severed roots.

b. **Root prune with barriers:** Roots are pruned as in (a) above, but a rigid plastic barrier of variable depth may be installed to force roots down. This method can be effective providing the barrier is deep enough and the environment for root growth is suitable at the greater depth. It has been experimentally shown that roots will resurface after going under the barrier, but that the cycle between subsequent root pruning's should be lengthened.

c. **Flexible root-controlling materials:** Materials such as Bio barrier and Root Shield are used to control root growth. Both contain encapsulated, time-released Treflon, on herbicide that controls root growth. Root Shield is a sewer gasket material used to prevent root penetration of sewers, while Biobarer is a geotextile fabric that is buried wherever an obstruction to root growth is desired.

d**. Material changes:** The use of materials that are more flexible and less expensive to maintain than concrete is another alternative in solving the sidewalk damage problem. Decomposed granite and asphalt were tried but met with resistance by the public due to the non-traditional appearance.

e. **Addition of drainage rock**: directly under the sidewalk reduces the potential for water to reach under here to the bottom of the sidewalk and thus discourages new roots from establishing themselves in that zone.

f. **Design modification:** In areas where the amount of growing space is severely restricted, the technique of bowing sidewalks or gutters or providing breaks in curb to accommodate trunk expansion, in conjunction with the above controlling methods has had successful results. Sidewalk-curb reconstruction of a monolithic design shall not be used in San Pablo.

4. The city will respond promptly to a safety concern when a public tree is involved.

5. The tree removal is permissible only after all practical and reasonable alternatives have been considered.

Reducing Infrastructure Damage by Tree Roots • Alternatives to Root Pruning

Sidewalk cutouts

• Minimizes the sidewalk width

• Maintain ADA accessibility

• Limited availability in San Pablo

Sidewalk meandering

• May require public easement from the property owner

Sidewalk ramping

• Requires ADA compliance

• Not viable near driveways

Flexible Paving Materials

• Cost

• Changing industry standards

• Environmental concerns

• Increased frequency of lifting at joints

• Increased maintenance costs

Relocate Sidewalk to Parking Lane

• Remove sidewalk from inside of tree line, and place on street side • Eliminates parking along the entire block - only feasible where sufficient parking exists

• Only possible on wide streets

• Few viable streets in San Pablo

• Only possible where parking demand is low

Hardscape Damage is Preventable at Planting

• Select appropriate tree species

• Use larger planting spaces

• Increase distance from hardscape

• Also consider an extra layer of gravel under a repaired sidewalk to minimize new root growth directly under the sidewalk.

• Relocate curb into parking lane only where roadway width is sufficient and where drainage, travel lanes and parking space will not be impacted.

Contents

Forward

(This foreword is not part of American National Standard A300 Part 1-2001.)

An industry-consensus standard must have the input of the industry that it is intended to affect. The Accredited Standards Committee A300 was approved June 28, 1991. The committee includes representatives from the residential and commercial tree care industry, the utility, municipal, and federal sectors, the landscape and nursery industries, and other interested organizations. Representatives from varied geographic areas with broad knowledge and technical expertise contributed.

The A300 standard can be best placed in proper context if one reads its Scope, Purpose, and Application. This document presents performance standards for the care and maintenance of trees, shrubs, and other woody plants. It is intended as a guide in the drafting of maintenance specifications for federal, state, municipal, and private authorities including property owners, property managers, and utilities.

The A300 standard stipulates that specifications for tree work should be written and administered by a professional possessing the technical competence to provide for, or supervise, the management of woody landscape plants. Users of this standard must first interpret its wording, then apply their knowledge of growth habits of certain plant species in a given environment. In this manner, the user ultimately develops their own specifications for plant maintenance.

ANSI A300 Part 1 – Pruning, should be used in conjunction with the rest of the A300 standard when writing specifications for tree care operations.

Suggestions for improvement of this standard should be forwarded to: NAA300 Secretary, c/o National Arborist Association, 3 Perimeter Rd. - Unit 1, Manchester, NH 03103, USA or Email: naa@natlarb.com.

This standard was processed and approved for submittal to ANSI by Accredited Standards Committee on Tree, Shrub, and Other Woody Plant Maintenance Operations – Standard Practices, A300. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard, the A300 committee had the following members:

Tim Johnson, Chair (Artistic Arborist, Inc.)
Bob Rouse, Secretary (National Arborist Association, Inc.)

Organizations Represented	Name of Representative
American Forests	Staff (Observer)
American Nursery and Landscape Association	Craig J. Regelbrugge
American Society of Consulting Arborists	Andrew Graham
	Donald Blair (Adviser)
	Beth Palys (Adviser)
American Society of Landscape Architects	Ron Leighton
Asplundh Tree Expert Company	Geoff Kempter
Associated Landscape Contractors of America	Preston Leyshon
	Jeff Bourne (Alt.)
The Davey Tree Expert Company	Joseph Tommasi
	Dick Jones (Alt.)
	Richard Rathjens (Adviser)
The F.A. Bartlett Tree Expert Company	Peter Becker
	Dr. Thomas Smiley (Alt.)
International Society of Arboriculture	Ed Brennan
	Sharon Lilly (Alt.)
National Arborist Association	Ronald Rubin
Tom Mugridge (Alt.) National Park Service	Robert DeFeo
Professional Grounds Management Society	Kevin O'Donnell
Society of Municipal Arborists	Andrew Hillman
U.S. Forest Service	Ed
Macie_	Mike Galvin (Alt.)
	Philip D. Rodbell (Alt.)
Utility Arborist Association	Jeffery Smith
	Matt Simons (Alt.)

American National Standard for Tree Care Operations –

Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices

(*Pruning*)

1 ANSI A300 standards

1.1 Scope
ANSI A300 standards present performance standards for the care and maintenance of trees, shrubs, and other woody plants.

1.2 Purpose
ANSI A300 standards are intended as guides for federal, state, municipal and private authorities including property owners, property managers, and utilities in the drafting of their maintenance specifications.

1.3 Application
ANSI A300 standards shall apply to any person or entity engaged in the business, trade, or performance of repairing, maintaining, or preserving trees, shrubs, or other woody plants.

1.4 Implementation
Specifications for tree maintenance should be written and administered by an arborist.

2 Part 1 – Pruning standards

2.1 Purpose
The purpose of this document is to provide standards for developing specifications for tree pruning.

2.2 Reasons for pruning
The reasons for tree pruning may include, but are not limited to, reducing risk, maintaining or improving tree health and structure, improving aesthetics, or satisfying a specific need. Pruning practices for agricultural, horticultural production, or silvicultural purposes are exempt from this standard.

2.3 Safety

2.3.1 Tree maintenance shall be performed only by arborists or arborist trainees who, through related training or on-the-job experience, or both, are familiar with the practices and hazards of arboriculture and the equipment used in such operations.

2.3.2 This standard shall not take precedence over arboricultural safe work

practices.

2.3.3 Operations shall comply with applicable Occupational Safety and Health Administration (OSHA) standards, ANSI Z133.1, as well as state and local regulations.

3 Normative references

The following standards contain provisions, which, through reference in the text, constitute provisions of this American National Standard. All standards are subject to revision, and parties to agreements based on this American National Standard shall apply the most recent edition of the standards indicated below.

• ANSI Z60.1, Nursery stock
• ANSI Z133.1, Tree care operations - Pruning, trimming, repairing, maintaining, and removing trees, and cutting brush - Safety requirements
• 29 CFR 1910, General industry 1)
• 29 CFR 1910.268, Telecommunications 1)
• 29 CFR 1910.269, Electric power generation, transmission, and distribution 1)
• 29 CFR 1910.331 - 335, Electrical safety-related work practices 1)

4 Definitions

4.1 **anvil-type pruning tool:** A pruning tool that
has a sharp straight blade that cuts against a flat metal cutting surface, in contrast to a hook-and-bladetype pruning tool (4.21).

4.2 **apical dominance:** Inhibition of growth of lateral buds by the terminal bud.

4.3 **arboriculture:** The art, science, technology, and business of commercial, public, and utility tree care.

4.4 **arborist:** An individual engaged in the profession of arboriculture who, through experience, education, and related training, possesses the competence to provide for or supervise the management of trees and other woody plants.

4.5 **arborist trainee:** An individual undergoing on-the-job training to obtain the experience and the competence required to provide for or supervise the management of trees and other woody plants. Such trainees shall be under the direct supervision of an arborist.

4.6 **branch bark ridge:** The raised area of bark in the branch crotch that marks where the branch and parent meet.

4.7 **branch collar:** The swollen area at the base of a branch.

4.8 **callus:** Undifferentiated tissue formed by the cambium around a wound.

4.9 **cambium:** The dividing layer of cells that forms sapwood (xylem) to the inside and inner bark (phloem) to the outside.

4.10 **cleaning:** Selective pruning to remove one or more of the following parts: dead, diseased, and/ or broken branches (5.6.1).

4.11 **climbing spurs:** Sharp, pointed devices affixed to a climber's boot used to assist in climbing trees. (syn.: gaffs, hooks, spurs, spikes, climbers)

4.12 **closure:** The process of woundwood covering a cut or other tree injury.

4.13 **crown:** The leaves and branches of a tree measured from the lowest branch on the trunk to the top of the tree.

4.14 **decay:** The degradation of woody tissue caused by microorganisms.

4.15 **espalier:** The combination of pruning, supporting, and training branches to orient a plant in one plane (5.7.2).

4.16 **establishment:** The point after planting when a tree's root system has grown sufficiently into the surrounding soil to support shoot growth and anchor the tree.

4.17 **facility:** A structure or equipment used to deliver or provide protection for the delivery of an essential service, such as electricity or communications.

4.18 **final cut:** A cut that completes the removal or reduction of a branch or stub.

4.19 **frond:** A leaf of a palm.

4.20 **heading:** 1. Cutting a currently growing, or a 1-year-old shoot, back to a bud. 2. Cutting an older branch or stem back to a stub in order to meet a defined structural objective. 3. Cutting an older branch or stem back to a lateral branch not large enough to assume apical dominance in order to meet a defined structural objective. Heading may or may not be an acceptable pruning practice, depending on the application.

4.21 **hook-and-blade-type pruning tool:** A pruning tool that has a sharp curved blade that overlaps a supporting hook; in contrast to an anvil-type pruning tool (4.1). (syn.: by-pass pruner)

4.22 **interfering branches:** Crossing, rubbing, or upright branches that have the

potential to damage tree structure and/or health.

4.23 **internodal cut:** A cut located between lateral branches or buds.

4.24 **lateral branch:** A shoot or stem growing from a parent branch or stem.

4.25 **leader:** A dominant or co-dominant, upright stem.

4.26 **limb:** A large, prominent branch.

4.27 **lion's tailing:** The removal of an excessive number of inner, lateral branches from parent branches. Lion's tailing is not an acceptable pruning practice (5.5.7).

4.28 **mechanical pruning:** A utility pruning technique where large-scale power equipment is used to cut back branches (5.9.2.2).

4.29 **parent branch or stem:** A tree trunk, limb, or prominent branch from which shoots or stems grow.

4.30 **peeling:** For palms: The removal of only the dead frond bases at the point they make contact with the trunk without damaging living trunk tissue. (syn.: shaving)

4.31 **petiole:** A stalk of a leaf or frond.

4.32 **phloem:** Inner bark conducting tissues that transport organic substances, primarily carbohydrates, from leaves and stems to other parts of the plant.

4.33 **pollarding:** The maintenance of a tree by making internodal cuts to reduce the size of a young tree, followed by the annual removal of shoot growth at its point of origin (5.7.3).

4.34 **pruning:** The selective removal of plant parts to meet specific goals and objectives.

4.35 **qualified line-clearance arborist:** An individual who, through related training and on-thejob experience, is familiar with the equipment and hazards in line clearance and has demonstrated the ability to perform the special techniques involved. This individual may or may not be currently employed by a line-clearance contractor.

4.36 **qualified line-clearance arborist trainee:**
An individual undergoing line-clearance training and who, in the course of such training, is familiar with the hazards and equipment involved in line clearance and has demonstrated ability in the performance of the special techniques involved.

This individual shall be under the direct supervision of a qualified line-clearance arborist.

4.37 **raising:** Selective pruning to provide vertical clearance (5.6.3).

4.38 **reduction:** Selective pruning to decrease height and/or spread (5.6.4).

4.39 **remote/rural areas:** Locations associated with very little human activity, land improvement, or development.

4.40 **restoration:** Selective pruning to improve the structure, form, and appearance of trees that have been severely headed, vandalized, or damaged (5.7.4).

4.41 **shall:** As used in this standard, denotes a mandatory requirement.

4.42 **should:** As used in this standard, denotes an advisory recommendation.

4.43 **stub:** An undesirable short length of a branch remaining after a break or incorrect pruning cut is made.

4.44 **thinning:** Selective pruning to reduce density of live branches (5.6.2).

4.45 **throwline:** A small, lightweight line with a weighted end used to position a climber’s rope in a tree.

4.46 **topping:** The reduction of a tree’s size using heading cuts that shorten limbs or branches back to a predetermined crown limit. Topping is not an acceptable pruning practice (5.5.7).

4.47 **tracing:** The removal of loose, damaged tissue from in and around the wound.

4.48 **urban/residential areas:** Locations, such as populated areas including public and private property, that are normally associated with human activity.

4.49 **utility:** An entity that delivers a public service, such as electricity or communications.

4.50 **utility space:** The physical area occupied by a utility’s facilities and the additional space required to ensure its operation.

4.51 **vista pruning:** Selective pruning to allow a specific view (5.7.5).

4.52 **watersprouts:** New stems originating from epicormic buds. (syn.: epicormic shoots)

4.53 **wound:** An opening that is created when the bark of a live branch or stem is penetrated, cut, or removed.

4.54 **woundwood:** Partially differentiated tissue responsible for closing wounds. Woundwood develops from callus associated with wounds.

4.55 **xylem:** Wood tissue. Active xylem is sapwood; inactive xylem is heartwood.

4.56 **young tree:** A tree young in age or a newly transplanted tree.

5 Pruning practices

5.1 Tree inspection

5.1.1 An arborist or arborist trainee shall visually inspect each tree before beginning work.

5.1.2 If a condition is observed requiring attention beyond the original scope of the work, the condition should be reported to an immediate supervisor, the owner, or the person responsible for authorizing the work.

5.2 Tools and equipment

5.2.1 Equipment and work practices that damage living tissue and bark beyond the scope of the work should be avoided.

5.2.2 Climbing spurs shall not be used when climbing and pruning trees.
Exceptions:
-when limbs are more than throwline distance apart and there is no other means of climbing the tree;
-when the bark is thick enough to prevent damage to the cambium;
-in remote or rural utility rights-of-way.

5.3 Pruning cuts

5.3.1 Pruning tools used in making pruning cuts shall be sharp.

5.3.2 A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb, without cutting into the branch bark ridge or collar, or leaving a stub (see Figure 5.3.2).

5.3.3 A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem (see Figure 5.3.3).

5.3.4 The final cut shall result in a flat surface with adjacent bark firmly attached.

5.3.5 When removing a dead branch, the final cut shall be made just outside the collar of living tissue.

5.3.6 Tree branches shall be removed in such a manner so as not to cause damage to other parts of the tree or to other plants or property. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark (see Figure 5.3.2). Where necessary, ropes or other equipment shall be used to lower large branches or portions of branches to the ground.

5.3.7 A final cut that removes a branch with a narrow angle of attachment should be made from the outside of the branch to prevent damage to the parent limb (see Figure 5.3.7).

5.3.8 Severed limbs shall be removed from the crown upon completion of the pruning, at times when the tree would be left unattended, or at the end of the workday.

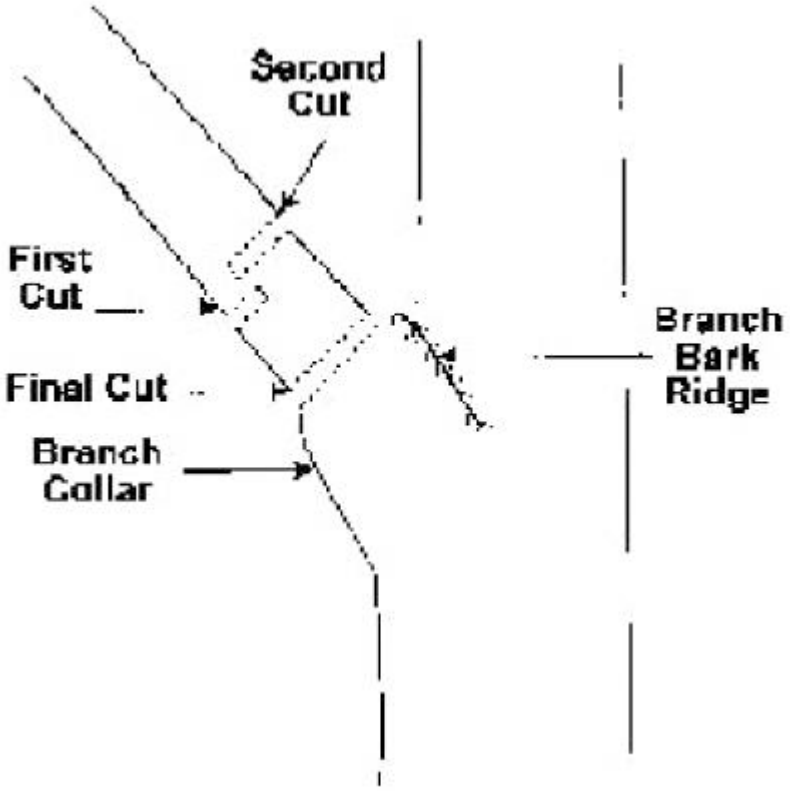


Figure 5.3.2. – A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb, without cutting into the branch bark ridge or collar, or leaving a stub. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark.

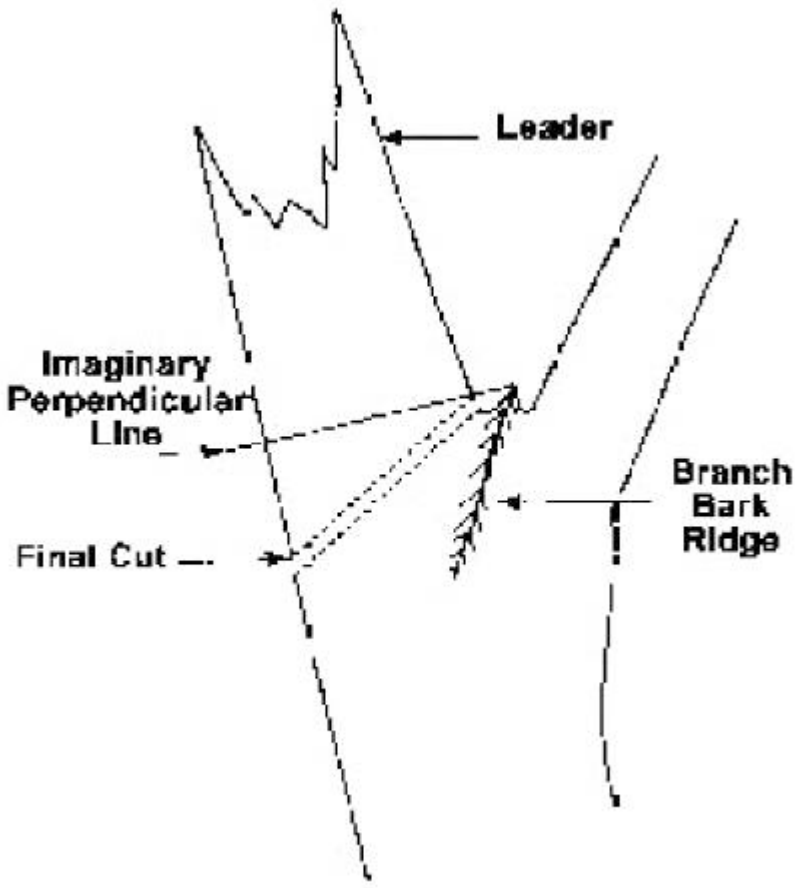


Figure 5.3.3. – A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem .

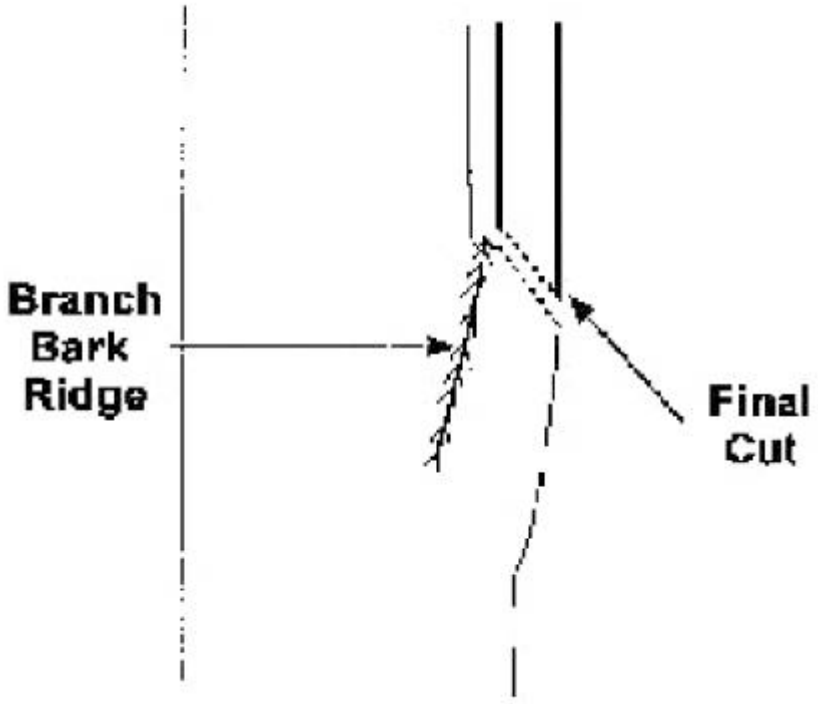


Figure 5.3.7. – A final cut that removes a branch with a narrow angle of attachment should be made from the outside of the branch to prevent damage to the parent limb.

5.4 Wound treatment

5.4.1 Wound treatments should not be used to cover wounds or pruning cuts, except when recommended for disease, insect, mistletoe, or sprout con trol, or for cosmetic reasons.

5.4.2 Wound treatments that are damaging to tree tissues shall not be used.

5.4.3 When tracing wounds, only loose, damaged tissue should be removed.

5.5 Pruning objectives

5.5.1 Pruning objectives shall be established prior to beginning any pruning operation.
To obtain the defined objective, the growth cycles and structure of individual

species and the type
of pruning to be performed should be considered.

5.5.3 Not more than 25 percent of the foliage should be removed within an annual growing season. The percentage and distribution of foliage to be removed shall be adjusted according to the plant's species, age, health, and site.

5.5.4 Not more than 25 percent of the foliage of a branch or limb should be removed when it is cut back to a lateral. That lateral should be large enough to assume apical dominance.

5.5.5 Pruning cuts should be made in accordance with 5.3 Pruning cuts.

5.5.6 Heading should be considered an acceptable practice for shrub or specialty pruning when needed to reach a defined objective.

5.5.7 Topping and lion's tailing shall be considered unacceptable pruning practices for trees.

5.6 Pruning types

Specifications for pruning should consist of, but are not limited to, one or more of the following types:

5.6.1 Clean: Cleaning shall consist of selective pruning to remove one or more of the following parts: dead, diseased, and/or broken branches.
5.6.1.1 Location of parts to be removed shall be specified.
5.6.1.2 Size range of parts to be removed shall be specified.

5.6.2 Thin: Thinning shall consist of selective pruning to reduce density of live branches.
5.6.2.1 Thinning should result in an even distribution of branches on individual limbs and throughout the crown.
5.6.2.2 Not more than 25 percent of the crown should be removed within an annual growing season.
5.6.2.3 Location of parts to be removed shall be specified.
5.6.2.4 Percentage of foliage and size range of parts to be removed shall be specified.

5.6.3 Raise: Raising shall consist of selective pruning to provide vertical clearance.
5.6.3.1 Vertical clearance should be specified.
5.6.3.2 Location and size range of parts to be removed should be specified.

5.6.4 Reduce: Reduction shall consist of selective pruning to decrease height and/or spread.

5.6.4.1 Consideration shall be given to the ability of a species to tolerate this type of pruning.
5.6.4.2 Location of parts to be removed and clearance should be specified.
5.6.4.3 Size range of parts should be specified.

5.7 Specialty pruning

Consideration shall be given to the ability of a species to tolerate specialty pruning, using one or more pruning types (5.6).

5.7.1 Young trees

5.7.1.1 The reasons for young tree pruning may include, but are not limited to, reducing risk, maintaining or improving tree health and structure, improving aesthetics, or satisfying a specific need.
5.7.1.2 Young trees that will not tolerate repetitive
pruning and have the potential to outgrow their space should be considered for relocation or removal.
5.7.1.3 At planting
5.7.1.3.1 Pruning should be limited to cleaning (5.6.1).
5.7.1.3.2 Branches should be retained on the lower trunk.
5.7.1.4 Once established
5.7.1.4.1 Cleaning should be performed (5.6.1).
5.7.1.4.2 Rubbing and poorly attached branches should be removed.
5.7.1.4.3 A central leader or leader(s) as appropriate should be developed.
5.7.1.4.4 A strong, properly spaced scaffold branch structure should be selected and maintained.
5.7.1.4.5 Interfering branches should be reduced or removed.

5.7.2 Espalier

5.7.2.1 Branches that extend outside the desired plane of growth shall be pruned or tied back.
5.7.2.2 Ties should be replaced as needed to prevent girdling the branches at the attachment site.

5.7.3 Pollarding

5.7.3.1 Consideration shall be given to the ability of the individual tree to respond to pollarding.
5.7.3.2 Management plans shall be made prior to the start of the pollarding process for routine removal of watersprouts.
5.7.3.3 Internodal cuts shall be made at specific locations to start the pollarding process. After the initial cuts are made, no additional internodal cut shall be made.
5.7.3.4 Watersprouts growing from the cut ends of branches (knuckles) should be removed annually during the dormant season.

5.7.4 Restoration

5.7.4.1 Restoration shall consist of selective pruning to improve the structure,

form, and appearance of trees that have been severely headed, vandalized, or damaged.
5.7.4.2 Location in tree, size range of parts, and percentage of watersprouts to be removed should be specified.

5.7.5 Vista pruning
5.7.5.1 Vista pruning shall consist of selective pruning to allow a specific view.
5.7.5.2 Size range of parts, location in tree, and percentage of foliage to be removed should be specified.

5.8 Palm pruning

5.8.1 Palm pruning should be performed when fronds, fruit, or loose petioles may create a dangerous condition.

5.8.2 Live healthy fronds, initiating at an angle of 45 degrees or greater from horizontal, with frond tips at or below horizontal, should not be removed.

5.8.3 Fronds removed should be severed close to the petiole base without damaging living trunk tissue.

5.8.4 Palm peeling (shaving) should consist of the removal of only the dead frond bases at the point they make contact with the trunk without damaging living trunk tissue.

5.9 Utility pruning

5.9.1 General
5.9.1.1 The purpose of utility pruning is to prevent the loss of service, comply with mandated clearance laws, prevent damage to equipment, avoid access impairment, and uphold the intended usage of the facility/utility space.
5.9.1.2 Only a qualified line clearance arborist or line clearance arborist trainee shall be assigned to line clearance work in accordance with ANSI Z133.1, 29 CFR 1910.331 – 335, 29 CFR 1910.268 or 29 CFR 1910.269.
5.9.1.3 Utility pruning operations are exempt from requirements in 5.1 Tree Inspection:
5.1.1 An arborist or arborist trainee shall visually inspect each tree before beginning work.
5.1.2 If a condition is observed requiring attention beyond the original scope of the work, the condition should be reported to an immediate supervisor, the owner, or the person responsible for authorizing the work.
5.9.1.4 Safety inspections of the work area are required as outlined in ANSI Z133.1 4.1.3, job briefing.

5.9.2 Utility crown reduction pruning

5.9.2.1 Urban/residential environment

5.9.2.1.1 Pruning cuts should be made in accordance with 5.3, Pruning cuts. The following requirements and recommendations of 5.9.2.1.1 are repeated from 5.3 Pruning cuts.

5.9.2.1.1.1 A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb, without cutting into the branch bark ridge or collar, or leaving a stub (see Figure 5.3.2).

5.9.2.1.1.2 A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem (see Figure 5.3.3).

5.9.2.1.1.3 The final cut shall result in a flat surface with adjacent bark firmly attached.

5.9.2.1.1.4 When removing a dead branch, the final cut shall be made just outside the collar of living tissue.

5.9.2.1.1.5 Tree branches shall be removed in such a manner so as not to cause damage to other parts of the tree or to other plants or property. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark (see Figure 5.3.2). Where necessary, ropes or other equipment shall be used to lower large branches or portions of branches to the ground.

5.9.2.1.1.6 A final cut that removes a branch
with a narrow angle of attachment should be made from the bottom of the branch to prevent damage to the parent limb (see Figure 5.3.7).

5.9.2.1.2 A minimum number of pruning cuts should be made to accomplish the purpose of facility/utility pruning. The natural structure of the tree should be considered.

5.9.2.1.3 Trees directly under and growing into facility/utility spaces should be removed or pruned. Such pruning should be done by removing entire branches or by removing branches that have laterals growing into (or once pruned, will grow into) the facility/utility space.

5.9.2.1.4 Trees growing next to, and into or toward facility/utility spaces should be pruned by reducing branches to laterals (5.3.3) to direct growth away from the utility space or by removing entire branches. Branches that, when cut, will produce watersprouts that would grow into facilities and/or utility space should be removed.

5.9.2.1.5 Branches should be cut to laterals or the parent branch and not at a pre-established clearing limit. If clearance limits are established, pruning cuts should be made at laterals or parent branches outside the specified clearance zone.

5.9.2.2 Rural/remote locations – mechanical pruning

Cuts should be made close to the main stem, outside of the branch bark ridge and branch collar. Precautions should be taken to avoid stripping or tearing of bark or excessive wounding.

5.9.3 Emergency service restoration

During a utility-declared emergency, service must be restored as quickly as possible in accordance with ANSI Z133.1, 29 CFR 1910.331 – 335, 29 CFR 1910.268, or 29 CFR 1910.269. At such times it may be necessary, because of safety and the urgency of service restoration, to deviate from the use of proper pruning techniques as defined in this standard. Following the emergency, corrective pruning should be done as necessary.

Annex A (informative)

Reference publications

International Society of Arboriculture (ISA). 1995. Tree Pruning Guidelines . Savoy, IL: International Society of Arboriculture (ISA).

CITY OF SAN PABLO
City of New Directions

TREE MAINTENANCE REQUEST FORM

ID #

Date 5/24/17

Reporting Party Information

Name

Address

City | E-Mail | Phone

Location of Complaint

Address

Description of Complaint

For City Use Only

Inspector | Cause of Complaint

Inspection date | Responsible Party ☐ City ☐ Private

Inspectors comments:

Maintenance & Operation Supervisor

Date

TREE REMOVAL PROCESS

A. GENERAL TREE REMOVAL PROCESS

Although tree removal is a last resort alternative, there are circumstances when it is necessary. An arborist can help decide whether or not a tree should be removed. The City will remove street trees that are: dead; diseased with a rapidly spreading pathogen that poses a hazard to other trees; or presents on imminent threat to public safety or a declared public nuisance. In other cases, where application is made to remove a healthy tree, consideration will be based on the guidelines included in this policy. Tree removal within the public Right-of-Way for private projects will be included in the planning design review process for the project. Tree removal is permissible only after all practical and reasonable alternatives have been considered. There are three types of tree removal: those that do not require public posting as listed exempt tree removal and those that require public notice,

B. IMMEDIATE TREE REMOVAL-NOT POSTED

Trees that will not receive public noticing or posting include the following:

1. The tree is dead or presents an imminent threat to public safety.
2. The tree is determined to be infected with a rapidly spreading pathogen, such as Dutch Elm disease, that poses an immediate hazard to other trees.

C. EXEMPT TREE REMOVAL

Streetscape and other projects that have already received public input and City Council approval for tree removal will be exempt from posting.

D. POSTED TREE REMOVAL

1. Prior to the removal of any tree, except as listed in sections B and C, the City will post a public notice, allowing anyone to protest the removal of the tree
2. No more than 5% of the street trees in any given block face will be removed per year unless a greater percentage is approved by the City Council. Removal is proposed when the Public Works Director determines any of the conflicts listed below cannot be remedied.
3. Site modifications to be evaluated to resolve conflicts before tree removal is considered.

    A. Modify private construction
    B. Root pruning/shaving
    C. Curb modification that provides for adequate drainage for entire block.
    D. Reduce sidewalk width near trees yet maintain ADA requirements
    E. Meander sidewalk
    F. Ramp sidewalk
    G. Reduce curb width
    H. Curb breaks

I. New technology to be evaluated as it develops

E. Types of Conflicts

1. The tree is causing damage to private or public infrastructure that cannot be mitigated by practical and reasonable options
2. The tree is causing persistent sidewalk and ADA safety concerns and cannot be mitigated by practical and reasonable options.
3. The tree hosts a disease other than in B2 above, or is in poor health.
4. The implementation of a tree phasing plan is needed to replace existing trees with more suitable species. Phased tree removal will occur only after a good faith effort is made to adhere to the maximum yearly tree removal percentage noted above. A comprehensive tree removal and proactive replanting plan shall be prepared and approved by City Council for phased removal. Example of conditions that would justify a phased removal plan include: a cluster of dead or dying trees as a result of a pathogen, or segments of excessive and or frequent tree related infrastructure damage that would require a whole row of trees to be removed.
5. The tree is in conflict with a private improvement plan. If a planning permit is required for the improvement, a street tree removal request must be identified on the planning permit application, which will require notification and removal approval as detailed in this process prior to the planning permit being processed. All applications to the Planning Department for private improvements that impact the public Right-of-Way must include existing conditions within the Public Right-of-Way on the submitted drawings. This includes trees, utility boxes, streetlight and other structures in the public Right-of-Way.
6. The removal is required to allow for the construction of public improvements when in consultation with an arborist, it is determined that there is no practical and or reasonable alternative available to retain the tree(s).

F. Tools that may be used to evaluate trees posted for removal.

A. Variables to be evaluated as part of tree removal decision.

1. Biological impacts of tree removal
2. Tree Species characteristic
    a) Climate adaptability
    b) Growth characteristic
    c) Soil adaptability
    d) Resistance or tolerance to insects, diseases and other environmental conditions
    e) Tree is a rare or unusual species in San Pablo
    f) Tree is an especially good example of its type in San Pablo
3. Condition of target tree's roots, branches, trunk, foliage
    a) Structural Integrity
    b) Tree general health
4. The tree's potential to reach mature height

a) Trees reach an economic and aesthetic height at maturity. Each tree species hosts a different optimal tree height and age. Site condition can enhance or reduce height potential.

5. The target tree is one of a limited number of large trees (i.e. trees over 40' tall) within the Impact area. An impact area is defined as a distance equal to double the height of mature species.
6. The tree species is uniquely suited to the site or alternatively the optimal value is decreased at specific site.
    a) Urban Habitat/Urban forest
    b) Environmental tolerance
    c) Property value
7. Value of tree as compared to cost to repair private and public damage by tree
8. Liability associated with tree.
9. Compliance with regulatory requirements, such as ADA
10. Value of tree as compared to future maintenance cost. A value analysis may be provided by an arborist on trees where the site cannot be modified and further analysis of the tree's impact is needed.

B. The model upon which the value analysis was developed is "A Guide for Plant Appraisals " published by the International Society of Arboriculture. A similar document may be used as the basis for value The variables listed above are to be considered when conducting the value analysis.

G. REPLACEMENT PROCEDURE

a) In general, trees removed for cause shall be replaced within 60 to 90 days with the same or approved species, in containers no smaller than 15 gallons.
b) Tree species will be selected so that curb or sidewalk damage will be minimized.
c) The property owner will be notified that a new tree will be planted and that they will be responsible to water the tree.
d) The standard procedure is to install a special perforated pipe next to the new plantings, where soil conditions warrant, in accordance with tree planting guidelines.

TREE REMOVAL REQUEST FORM

Name: _____ **Date:** _____

Address: _____ **Phone:** _____

Location of Tree: _____

Cross Street: _____

Reason for removal: _____

This Area For City Use Only

ID #: _____ Respon. Party: _____ Cause: _____

Priority Code: _____ # of Trees: _____

Species _____ Height _____ Diameter _____

Inspection date: _____ INSP. By: _____

COMMENTS: _____

Insert Photo

_____ _____

Maintenance & Operations Supervisor Signature Date

CITY OF SAN PABLO
Public Works and Engineering Services

CITY OF SAN PABLO
City of New Directions

San Pablo
All-America City
NATIONAL CIVIC LEAGUE
2014

January 1, 2018

SAMPLE
Main Street
San Pablo, CA 94806

Dear Sample:

Subject: Falling Tree Branches at _____

Per the attached parcel map, it appears the properties listed as parcel #s: 0000 and 0000 belong to you. Parcels 0000 and 0000 are located in the City of San Pablo. Any improvements on these parcels need to go through City of San Pablo permitting.

This courtesy letter is to inform you that the City of San Pablo has received two claims in the past year regarding fallen branches from a tree located in the planter strip along your property Parcel#: 0000 adjacent to Main Street. The City denied the claims because the tree was not planted by the City. Street trees that are not planted by the City are not the responsibility of the City.

City Maintenance has responded three times for fallen branches in the past year. It is the responsibility of the property owner to maintain his or her property and adjacent sidewalk in a safe and passable condition, pursuant to section 12.04.015 of the San Pablo Municipal Code. You will be charged for any further maintenance work the City undertakes to maintain a safe right-of-way.

To prevent weakened branches from falling into the Public Right of Way in the future, you will need to apply for a City of San Pablo Public Works encroachment permit for any work using the street as access. This will ensure free flowing traffic and safe work conditions for any tree trimmer you may hire.

13831 San Pablo Avenue, Building 3 ● San Pablo, CA 94806
Main: 510-215-3060 ● *Fax:* 510-215-3013
www.SanPabloCA.gov

If you have any questions, please contact me at (000) 000-0000. If you no longer own this property, please let me know who the new owner is and any contact information for that new owner.

Thank you in advance for your cooperation.

Sincerely,

CITY OF SAN PABLO
Public Works and Engineering Services

January 1, 2018

CITY OF SAN PABLO
City of New Directions

San Pablo
All-America City
NATIONAL CIVIC LEAGUE
2014

SAMPLE
Main Street
San Pablo, CA 94806

Dear Sample:

Subject: Sidewalk at _____

During a recent road project, Public Works Division Staff discovered a raised and broken section of sidewalk in front of your property, located at 2883-85 15th Street in the City of San Pablo, California. Upon inspection of the conditions, it was observed that a tree in your front yard has lifted the sidewalk and damaged the sidewalk. I have included a photo to help illustrate the situation.

While you may not have planted the tree, as property owners you are legally responsible for the maintenance and upkeep of the sidewalk in front of your property. As specified in the City of San Pablo's municipal code, the City must include the following specific language in this letter:

> *"You are hereby notified that a portion of sidewalk in front of the above address is in such condition that the same endangers persons and property, and is in a condition to interfere with the public convenience and use thereof. Therefore, pursuant to the provisions of the "Improvement Act of 1911 of the State of California" and City Municipal Code Section 12.04.020, you are hereby notified that such repair must be started within two (2) weeks from the above date. Said Improvement Act and City Code holds the property owner liable for properly maintaining the sidewalk in a safe condition. Any repair must be made in accordance with the City of San Pablo's standard sidewalk details, specifications and under the supervision of the Public Works Division Manager."*

In order to eliminate this tripping hazard, you are required to replace the section of damaged sidewalk. Please note that a Public Works permit must be obtained before any work is carried out. Your homeowner's insurance may cover sidewalk repairs, please check with your insurance agent.

*** * * PROPERTY OWNERS PLEASE NOTE * * ***

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Main: 510-215-3060 ● *Fax:* 510-215-3013
www.SanPabloCA.gov

"You are further notified that if said repair is not commenced within two (2) weeks from the date hereof and diligently and without interruption prosecuted to completion, the Public Works Division Manager will make such repair and all of the necessary costs, including personnel time, equipment and materials thereof, if not paid, will be a lien upon such property."

Should you have any questions regarding the repair or the permit process, please contact the City's Engineering Aide, Simon Wood at (510) 215-3083. Thank you in advance for your cooperation.

Sincerely,

Chapter 12.16
TREES, SHRUBS AND PLANTS IN PUBLIC PLACES

Sections:

12.16.010 Permit—Required to trim, cut or remove—Supervision authorized.

A. It is unlawful for any person to cut, trim, remove, mutilate, injure or in any way impair the growth of any tree, shrub or plant being or growing in or on public ground or parking strip in the city without a permit issued by the public works director, who may refuse such permit upon reasonable and lawful grounds.

B. The public works director may require the work mentioned in subsection A of this section or any part thereof to be done under the city's supervision. (Ord. 2017-004 § 1 (part), 2017: prior code § 30.1)

12.16.020 Permit—Required to plant.

It is unlawful for any person to plant any tree, shrub or plant in or upon any parking strip or public ground of the city without having first obtained a permit therefor from the public works director, who shall approve the kind, variety and size of any tree, shrub or plant and may refuse a permit for the planting thereof if same does not conform to the policy or plans of the city. (Ord. 2017-004 § 1 (part), 2017: prior code § 30.2)

12.16.030 Unauthorized placement of salt, herbicide or deleterious materials prohibited.

It is unlawful for any person to place or cause to be placed in or upon any parking strip or public ground any salt, oil, herbicide or any other material deleterious to the growth of plants, or in such close proximity to public ground or parking strip that such deleterious material will permeate the soil thereof, without first having obtained permission from the public works director. (Ord. 2017-004 § 1 (part), 2017: prior code § 30.3)

12.16.040 Abatement of trees causing interference or obstruction.

Any tree growing or standing upon public property or private property or partially upon public property and partially upon private property in such manner that any portion thereof interferes with poles, lines, wires or electroliers, or the light emitted by such electroliers, lawfully erected, constructed or maintained, along any public street or sidewalk of the city, or interferes with the visibility of such streets, sidewalks or intersection thereof by any person or persons using the same lawfully, or any such tree which has become diseased or weakened in such manner as to be dangerous to persons lawfully using the streets or sidewalks of the city, constitutes a nuisance and the public works director is authorized to abate such nuisance or cause the same to be abated by trimming, cutting or removing all or such portions of such tree as may be necessary to eliminate such interference, obstruction or condition. (Ord. 2017-004 § 1 (part), 2017: prior code § 25.11)

12.16.050 Placement of trees in parking area of public streets.

All trees that are planted in any public street or public highway shall be: (A) not less than eighteen inches from the face of curb in a planter strip along the sidewalk, at a distance of less than twenty-five feet from any other tree and not less than twenty feet from the curb return at any intersection; and (B) centered in a median that is no less than three feet in width, except as otherwise ordered by the public works director or designee. (Ord. 2017-004 § 1 (part), 2017: prior code § 25.12)

12.16.060 Landscape management in the public right-of-way and on public facilities.

All planting and maintenance of trees, shrubs, and ground cover will follow the guidelines established in the city of San Pablo’s master landscape plan. Changes or updates to the master landscape plan are to be approved by the city council. Implementation of the master landscape plan is the responsibility of the public works department. Any deviations from those guidelines require approval from the public works director or designee. (Ord. 2017-004 § 1 (part), 2017)