CITY OF FULLERTON

COMMUNITY FOREST MANAGEMENT PLAN

November 1998
City of Fullerton
Maintenance Services Department
Landscape Maintenance Division
Robert W. Savage, Director of Maintenance Services

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Introduction

Founded in 1887, Fullerton got its start as an agricultural community. As the years passed, agriculture gave way to residences, oil drilling, and business. Today, Fullerton is primarily residential but has a diverse mix of educational, cultural, and business institutions. Fullerton has retained a friendly, small town atmosphere through many community programs and by preserving its original downtown, which continues to be the cultural and social center of the City. One of the characteristics that sets Fullerton apart from surrounding cities is its extensive community forest.

Fullerton's "community forest" is viewed as all of the trees and landscape on public and private property within the City's corporate boundaries. Like its counterpart, the national forest, Fullerton's community forest requires professional planning and management if it is to prosper over time. This Community Forest Management Plan is designed to provide guidance to both the City's professional staff and Fullerton residents so that they can work together to create a healthy community forest.

Fullerton is well known for the wealth of beautiful trees which line its streets, beautify its parks, and add charm and character to the community. Fullerton is truly a city of trees. The City has earned the honor of *Tree City USA* for the past 17 years. This award is presented by the National Arbor Day Foundation, in cooperation with the U. S. Forest Service and the National Association of State Foresters, and is given to cities demonstrating a commitment to tree planting and outstanding urban forest management practices.

The residents of Fullerton express a great deal of pride in the trees that make up the community forest. To the community, the trees play a major role in enhancing the charm and character that is associated with Fullerton while increasing the quality of life. Preserving the historical elements of the community is a primary concern to the residents. Perhaps one of the most visible examples of the community's need to preserve its heritage can be observed on Brookdale Place where large, 40-to 50-year-old, Jacaranda trees line the street and enhance the ambience of the historical homes.

In addition to the aesthetic and historic value, trees add economic and environmental benefits to the community. According to research by the U. S. Forest Service, trees contribute to an increase in home values. Estimates suggest homes that have the benefit of trees can expect increases in property values ranging from 7 to 20 percent ("Shading Our Cities," Pg. 49). Trees also help the environment by providing sound barriers, reducing heat islands, reducing soil erosion and runoff, releasing oxygen into the atmosphere, and absorbing carbon dioxide and other greenhouse gases.

Purpose

The City of Fullerton is committed to preserving its valuable community forest. In 1995, the City Council adopted the Fullerton Community Forestry Ordinance for the following purposes: 1) to realize the optimum public benefits of trees on the City's streets, in public places, and on private property; 2) to integrate street tree planting and maintenance with other urban elements and amenities; 3) to promote efficient, cost-effective management of the City's community forest by coordinating public and private efforts within a comprehensive and professional management system; 4) to reduce the public hazard, nuisance and expense occasioned by improper tree selection, planting, and maintenance; 5) to provide for the creation of an equitable, sustained and reliable means of managing the City's community forest; and 6) to create and maintain a unified urban-forest resource, enhancing the City's overall character and sense of place.

To achieve the above purposes, the City of Fullerton's Maintenance Services Department, with the advice and coordination of the Development Services, Engineering, and Community Services departments, has prepared a Community Forest Management Plan. This plan shall serve as a guideline for coordinating the activities of all City departments.

GOALS

The Community Forest Management Plan has established the following goals in accordance with the Community Forestry Ordinance (FMC § 9.06.080.) (a copy of the Community Forestry Ordinance can be found in Appendix 6):

1. Establish and maintain optimal tree cover;
2. Maintain trees in a safe and healthy condition through good cultural practices;
3. Establish and maintain an optimal level of age and species diversity;
4. Promote conservation of tree resources;
5. Provide suitable locations for and select, situate, and maintain street trees to minimize hazard, nuisance, hardscape damage, and maintenance costs, with special consideration given to compatibility in commercial areas with regard to aesthetics and signage visibility;
6. Centralize tree management under one department to ensure the enforcement of policies;
7. Foster citizen support for local community forestry programs and encourage good tree management on privately owned properties.

Achieving these goals will allow Fullerton to recognize the full benefits of its community forest resource. These goals will be achieved by adopting and implementing specific objectives, policies, and procedures as set forth in this plan.

Community Forest Management Plan

Tree Program Description

Background

Tree management for the City of Fullerton's community forest is centralized in the Maintenance Services Department's Landscape Division, under the guidance of the Department Director, to ensure the enforcement of tree program policies. This program is responsible for developing and meeting goals and objectives, implementing policies and procedures, tracking and measuring performance, and coordinating the activities of several City departments as they relate to the management of the community forest. Fullerton's trees are located in parkways, parks, greenbelts, medians, public parking lots, and other public grounds.

The tree program provides a number of tree services, primarily through a private contractor. These services include scheduled and unscheduled pruning, removal, planting, inspection, pest control, and emergency response. A City supervisor and a tree inspector oversee the work of the contractor. City and contractor personnel receive continual training in tree pruning, removal, planting, and pest control practices. The City of Fullerton supervisor and tree inspector are certified arborists, and many of the contractor's employees are certified arborists and/or certified tree workers. The City also contracts with a certified arborist on an as needed basis.

Community forest management is funded as a distinct program in the Maintenance Services Department budget, and is financed by revenue from the City's sanitation fund. Sanitation funds can be used for tree maintenance because proper tree care decreases leaf drop and branch loss into the streets, which, in turn, reduces the amount of plant material entering the City's sanitation system. In addition, the Landscape Division will work in partnership with non-profit community groups to apply for and administer competitive tree planting grants.

It is the goal of the Landscape Division's Tree Program to maintain and prune City trees located in tree wells, parkways, medians, greenbelts, parks, parking lots, and all other public grounds in a safe, aesthetically pleasing manner, using proper arboricultural standards.

Scheduled Pruning

The consistent practice of scheduled pruning is essential to the health, structure, safety, and aesthetics of trees, and is the most important function in sustaining the tree population. It is currently the tree program's objective to prune 27 percent of its trees per year, which totals 10,060 trees. This number includes both scheduled and unscheduled pruning. Pruning, when performed properly, improves the health of the tree through the removal of dead, diseased, injured, broken, or crowded branches. A well-trimmed tree is also less susceptible to disease and pest infestation.

Proper pruning improves the structure of a tree. Good tree structure reduces branch failure. Eliminating or reducing fallen branches leads to a reduction in emergency service calls and hazards to people or property. Good health and proper structure also make a tree more aesthetically pleasing.

Pruning frequency is typically determined by the growth characteristics of the tree species. Pruning frequency varies in Fullerton because some trees, such as the Chinese Elm, require pruning every two years, while other trees require pruning every four or six years. Based on the species in Fullerton's tree inventory, it is estimated that the trees should be pruned on an average of every three and one-half years. Prior to performing tree pruning in a given area, the tree inspector- who is also a certified arborist- will visit the site and inspect the trees to determine if pruning is necessary.

The pruning standards in Appendix 1 provide precise standards and specifications for pruning the trees in the City's community forest.

Unscheduled Pruning

Unscheduled pruning is typically generated by a service request. Service requests are primarily received from Fullerton residents, but City employees also place requests. When a citizen request for tree pruning is received, it is entered into a computerized service request system, and a printed copy of the request is forwarded to the tree inspector. The inspector will examine the tree and make a recommendation on whether pruning is necessary. The inspection process usually takes no longer than ten working days. Generally, unscheduled pruning is performed only if the tree meets certain criteria. Public safety concerns such as sign, sidewalk, or street clearance or the potential threat of damage or injury to a person or property are the major reasons for performing unscheduled pruning. Unscheduled pruning is not provided for aesthetic purposes, excessive leaf drop, or simply because a request has been made.

Inspection

Tree inspection includes time spent inspecting trees and managing the program's computerized tree inventory system. This tree inventory system contains information about the trees of Fullerton's community forest such as species, diameter, location, crown spread and height, and health. The tree inspector uses this system as a management tool for planning and scheduling all tree activities, such as pruning, removal, and inspection. The inventory program also contains a complete history of maintenance records, and can identify trees currently creating a public hazard or nuisance, such as hardscape damage or utility line conflicts. By considering all elements affecting the tree and its environment, the Landscape Division managers can make cost benefit decisions regarding what to do with the tree.

The process of tree inspection is performed for several reasons. As mentioned above, the tree inspector evaluates all trees for which a service request for tree trimming has been made. The inspector responds to emergency calls or reports of diseased or pest-infested trees to evaluate the condition of the tree. Finally, prior to scheduling a tree for regular pruning, the inspector reviews each tree to determine if trimming is necessary.

Pest Control

Spraying or other chemical applications needed to eliminate pests is done on an as-needed basis. Only employees with special training are allowed to perform the application, and they follow stringent safety procedures.

Planting

Planting is another element of the current tree program. It is the objective of the program to plant 1,000 trees every year. These plantings are necessary to fill vacant sites and to replace current year removals.

The planting standards in Appendix 2 provide guidelines and specifications for proper tree planting. Appendix 3 provides guidelines and specifications for selecting appropriate nursery stock for planting.

Removal

The street tree program also provides tree removal. A total of 350 trees are removed, on an average, per year. Tree removals are prioritized based on need, but are typically performed to eliminate dead, dying, or hazardous trees. Tree removal is occasionally necessary to eliminate a dangerous situation, such as a raised sidewalk, caused by the tree. In addition, trees that are causing other problems, such as continual sewer lateral problems, are sometimes recommended for removal. The Director of Maintenance Services has the sole authority to make recommendations for tree removal (see FMC § 9.06.050). If there is an objection to the Director's decision to remove a tree, there is an appeal process provided by the City (see FMC § 9.06.050).

The removal standards in Appendix 4 provide guidelines and specifications for proper tree removal and stump grinding.

Emergency Response

The tree program provides emergency response services to provide for the removal of broken and hanging branches, fallen branches, and abatement of any conditions hazardous to people or property. Emergency response is typically performed within a few hours, but, in the event of a major storm, response could take as much as 24 hours. All efforts are taken to secure a hazardous situation if debris cannot be removed immediately.

Community Forest Management Plan

Characteristics of the Community Forest

Determining the condition of the community forest is essential in establishing a suitable Community Forest Management Plan. The department uses a computerized tree inventory system to maintain a thorough description of the condition and other elements regarding each tree in the City's urban forest. The trees in the urban forest are found in parks, parkways, medians, and other common areas. This section discusses important characteristics of a well-planned community forest and how these characteristics work together to provide a healthy population of trees. The characteristics include population density, species diversity, and age diversity.

Goal: To establish and maintain an optimal level of age diversity, species diversity, and tree cover.

Population Density

Population density refers to the number of trees planted in available sites throughout the community. Sustaining a city tree population with a density of at least 95 percent will create a desirable level of population density and contribute to an optimal level of tree cover. Optimal tree cover will be achieved further by planting approved tree species that provide the greatest canopy spread the tree site can accommodate. Obtaining optimal tree cover will provide the highest level of economic, environmental, and sociological benefits to the residents of Fullerton.

The current computerized inventory indicates a current population density of 85 percent in Fullerton. There are currently 44,146 tree sites in Fullerton. Of that sum, 37,648 are planted with trees, 6,018 are vacant street tree sites, and 480 are stumps.

Objectives:

- Establish and maintain a street tree population density of 95 percent by planting approximately 6,000 new trees to achieve optimal tree cover.
- Remove 480 stumps and plant new trees.
- Establish a list to prioritize tree plantings and stump removals.

Action Plan:

- Plant 200 trees per year to fill the 6,000 vacant sites and achieve a population density of 95 percent within 30 years. The number of trees planted per year may be accelerated by expanding the budget and/or through successful tree planting grants.

- Remove no less than 48 stumps per year to remove the existing 480 stumps within ten years. Following the removal of each stump, the ground will be allowed a minimum of two months for settling before a new tree is planted. Forty-eight replacement trees will be planted each year. Tree planting will only be performed from October through April. Planting during this season will allow the tree to benefit from milder temperatures and rain.

- The Department's computerized tree inventory system will be used to prioritize stump removal and tree planting. By generating a list of vacant tree sites and tree stumps that include addresses, staff can schedule work to be performed. This list will be sorted by address to allow more efficient scheduling of work. Arterial streets with vacant planting sites and/or stumps will receive the highest priority for planting or stump removal and tree replacement.

Species Diversity

Species diversity refers to the variety of distinct tree species that make up the community forest. Species diversity is essential to sustaining a healthy tree population. Pests and diseases are normally unique to a certain species of tree; therefore, a large population of one tree species could be lost during an insect or disease epidemic. For example, in the early 1930s, large populations of the American Elm were lost due to Dutch Elm's Disease. Many cities lost as much as 70 percent of their street trees because this tree was so heavily planted. Thus, it is important to ensure that the community forest does not contain too many trees of the same species so the trees are not as vulnerable to pests and diseases.

While a certain level of species diversity is necessary to the urban forest, too high a diversity is difficult and expensive to maintain, and puts the forest at risk to pests and diseases. Each tree species requires different maintenance levels (e.g., pruning frequency, pruning method, etc.). Therefore, when determining the appropriate level of diversity for a community, a balance must be achieved to ensure the diversity is neither too high nor too low. National guidelines recommend that no more than 10 percent of any one species is planted in a community forest to reduce the effects of pests and disease. To achieve cost-effective tree management and provide a consistent forestry theme throughout the community, it is Fullerton's policy to have no tree species that make up less than 1 percent of the tree population.

In 1997, Fullerton developed a list of 46 tree species recommended for planting in the urban forest. The current tree population contains 234 different species. The two most widely planted species are the Chinese Elm and the Magnolia. These

two tree species account for approximately 10 percent each of the community forest.

The Magnolia tree has been included on the approved species list, but the Chinese Elm is not because it is a high maintenance and high cost tree. The Chinese Elm is subject to branch failure, typically requires pruning every other year, and causes hardscape damage. When it is necessary to remove an elm tree, a species from the approved list will be selected as the replacement tree. Of the other species planted in Fullerton, only 18 account for more than 1 percent each of the population, and seven of these are not on the approved species list. This means approximately 214 tree species planted in Fullerton account for less than 1 percent each of the tree population. In fact, there are numerous tree species with less than five trees in the inventory.

Objectives:

- Reduce tree species diversity, over the next 20 years, to a maximum of 46 approved species through replacement of unapproved tree species.
- Prioritize tree removals needed to achieve the desired species diversity.
- Ensure no species accounts for more than 10 percent or less than 1 percent of the population.
- Prioritize tree replacements following removal.

Action Plan:

- Remove 2 percent of the tree population per year and replace with tree species from the approved species list to achieve species diversity in 20 years.
- Species diversity removals will be prioritized with the use of the computerized tree inventory system, and will include many factors in addition to tree species. These factors include age, health, maintenance records, infrastructure damage, and potential for causing future problems. Prioritizing removals will ensure tree managers identify the most problematic trees, and that no tree is removed unnecessarily. It may become necessary for removals to be reprioritized several times during the year as new problems (e.g., dead, dying, or hazardous trees) are discovered in the tree population.
- Tree replacements will be coordinated so tree sites are vacant for the least amount of time possible. Therefore, when practical, removals will be performed within two months of the start of the planting season and be completed two months prior to the end of the planting the season. (The two-month time frame on each end of the planting season will be considered to allow time for ground settling after tree removal.)

- Prior to selecting a replacement tree species for the trees being removed, the Street Tree Master Plan will be reviewed to determine what trees are planned for the street. The site should then be evaluated and compared to the approved species list to ensure that the site and tree species are compatible. As a final step, the tree inventory list should be reviewed to make sure the species does not make up more than 10 percent of the tree population. Efforts will be made to plant an adequate number of each species so that no tree species will make up less than 1 percent of the population.

Age Diversity

Age diversity refers to the variation in maturity of the tree population. Age diversity is an important element of the community forest. Very young trees and very old trees require more frequent maintenance than mature trees. Young trees need training (pruning that directs their growth) to get them started properly. This type of pruning is necessary so the tree will develop into a healthy, low maintenance tree. Very old trees require more frequent pruning and preventive maintenance to reduce the risk of injury to people, property, and the tree itself. This type of maintenance is provided to prolong the life of the tree; however, the costs are very high. A mature forest provides the maximum level of all benefits--aesthetic value, cost-effective management, and environmental improvement.

If trees of the same species are planted at the same time most will reach maturity and need to be replaced at the same time. This will result in rapid, localized reduction of canopy cover and the loss of the benefits provided by the community forest. This situation is less likely to occur if the forest is composed of trees with varying ages. Age diversity is accomplished through the replacement of trees. To sustain a community forest with a median age of 50 years, 2 percent of the population should be replaced each year. This means the entire forest is rotated every 50 years.

The age of a tree is measured as a ratio of dynamic to static mass. Calculating the dynamic and static mass ratio of a tree requires trunk core sampling. This process causes injury to the tree; therefore, the age of a tree is estimated by considering the tree species and the trunk diameter. Based on Fullerton's computerized tree inventory, approximately 28 percent of the tree population is young trees with a diameter of less than six inches. Mature trees, which are between 6 and 24 inches, make up 62 percent of the population. Over-mature trees with diameters greater than 24 inches make up 10 percent of the population.

Objectives:

- Establish age diversity that consists of 20 percent young, 70 percent mature, and 10 percent over-mature trees.

Action Plan:

- The removal and replacement of trees to meet the age diversity objective will begin in the year 2018. Prior to 2018, the City will concentrate on achieving species diversity and eliminating costly and hazardous trees. During this time, the community forest will be maturing and moving towards optimum age diversity. Beginning in the year 2018, 2 percent of the tree population will be replaced each year to maintain the desired age diversity.

Community Forest Management Plan

Health and Safety of the Community Forest

Goal: Maintain trees in a safe and healthy condition through good cultural practices.

Promoting a healthy urban forest protects the community's investment in its trees and provides a safe environment for the public, as well as increases the value of both public and private property. Improperly maintained and unhealthy trees often have an increased risk of failure, which can result in personal injury and property damage.

Good cultural practices are essential to maintaining the health and safety of the urban forest, and will allow Fullerton to maximize the benefits derived from its trees. Proper selection, training, and watering of newly planted trees, proper and regular scheduled pruning of established trees, and tree inspections will promote good tree structure and health. Irrigation is necessary for tree survival in many situations, but excessive or improper irrigation can contribute to the decline of established trees. Other practices, such as immediate removal of diseased and dying trees, are important to the health and safety of the community forest.

Improper tree pruning, such as topping and "hatracking" can result in hazardous tree structure and decay. These practices also leave the tree in a vulnerable state. Trees in a weakened or vulnerable condition are more likely to be afflicted by diseases and attacked by pests.

The health of a tree is determined by evaluating the following elements: trunk condition, structure condition, crown condition, and the presence of pests or diseases. Each of the above factors is rated, and a mathematical formula is applied to arrive at an overall condition rating for the tree. The condition rating will be good, fair, poor, or dead. The current population of Fullerton's community forest is comprised of 82 percent "good condition" trees, 17 percent "fair condition" trees, less than 1 percent "poor condition" trees, and no dead trees in the tree population.

Objectives:

- Provide regular pruning of established trees.
- Prohibit unacceptable pruning methods that contribute to the decline of the tree.
- Obtain vigorous, healthy trees which can be easily trained to grow into attractive trees for planting in the community forest.

- Provide proper and timely tree maintenance and watering for newly planted trees to ensure good development.

- Establish a priority list for removing dead, poor condition, fair condition, and young trees that are not adapting, with the goal of achieving the following:

  - Elimination of dead, poor condition, or diseased trees from the population;

  - Street trees in good condition should account for more than 90 percent of the population;

  - Street trees in fair condition should account for less than 10 percent of the tree population.

Action Plan:

- All tree species shall be placed on a regular pruning cycle schedule and be pruned within the recommended time frame. The frequency of tree pruning will be based on the frequency recommended for the species and growth patterns of the tree.

- All trees shall be pruned in accordance with the guidelines and specifications described in Appendix 1.

- Improper pruning methods, as indicated in Appendix 1, will be prohibited.

- All new trees will be selected in accordance with the Nursery Stock Standards in Appendix 3.

- Newly planted trees, on arterial roads or in residential areas that do not have proper irrigation, shall be watered once a week from May to September and once a month from October to April.

- Newly planted trees shall be pruned within one year of planting in accordance with the pruning specifications in Appendix 1. A second pruning shall be provided one year following the initial pruning. These two initial prunings will provide training for the trees to ensure proper tree structure.

- Newly planted trees that have failed to adapt after one year will be removed immediately. All other young trees that are declining in health will be removed after one year if the health of the tree has not improved. Tree managers will determine the cause for failure of each tree removed. This will allow them to develop trends and take preventive measures in the future.

- Dead trees will be removed from the tree population as soon as possible after discovery. If the dead tree was not on the approved species list, its removal will be part of the 2 percent removal target required to achieve proper species diversity.

- Poor condition trees will be removed as part of meeting the species diversity removals of 2 percent per year. If the removal of the poor condition tree will not contribute toward reaching species diversity, tree removal will be performed as the budget allows.

- Fair condition trees in excess of 10 percent of the population will be removed as the budget allows, and will be prioritized after poor condition trees have been removed. If the priority for removing a fair condition tree is high enough and the tree is an unapproved species, removal will be scheduled as part of the species diversity removals.

Community Forest Management Plan

Species Selection for the Community Forest

Goal: Provide suitable locations for and select, situate and maintain street trees to minimize hazard, nuisance, hardscape damage, and maintenance costs.

Species selection at the time of planting is the key to a well-adapted community forest. Prior to planting on City streets, tree species must be selected based on their horticultural compatibility and the design suitability of a particular site. The relationship between the growth characteristics of a given tree species and the available growing space in a selected site will help determine if the two are compatible. When a tree is not compatible with its planting site a number of problems can arise as a result of roots and branches. Most problems caused by tree roots or branches occur because the tree was planted in a location that could not accommodate its full growth potential. This inevitably results in damage to the surrounding environment and the tree itself. Selecting the proper tree species for an available site will alleviate conflicts, reduce the risk of hazards, reduce maintenance costs, and provide healthier trees.

Fullerton has numerous trees in its inventory that interfere with overhead utility lines, hardscape, and sewer lines. These conflicts could have been eliminated or made less severe if proper tree selection and planning had occurred prior to planting. The following contains information regarding utility line, hardscape, and sewer line conflicts and how these conflicts have impacted Fullerton's community forest.

<u>Utility Lines</u>

Fullerton's tree population contains 3,340 trees located in close proximity to high voltage power lines; however, 1,134 of those trees are species compatible with overhead utility lines, which means the maximum height the species will achieve is ten feet less than the height of the overhead lines. The remaining 2,206 trees are species not compatible with utility lines.

Overhead utilities present an interesting problem. Tree branches that grow very near utilities can become a grounding source for the line. To prevent this from happening, utility companies routinely prune trees that interfere with their services. Pruning performed by utility crews is done only to provide clearance of the line, and does not consider the health, aesthetics, or structure of the tree. This often leads to the decline of the tree.

To eliminate some of the utility line conflicts, the Maintenance Services Landscape Superintendent has a verbal agreement with Southern California Edison regarding removal of trees that interfere with high voltage overhead electrical lines. For

every two trees Fullerton removes, Edison will remove one at its expense. Fullerton will be responsible for providing replacement trees that are suitable for the site.

Hardscape

City street trees are the cause of thousands of damaged sidewalks, curbs, gutters, walkways, planters, and driveways in Fullerton. This hardscape damage is on both public and private property, and ranges from severe to mild. Improper tree selection and the planting of inappropriate tree species on City parkways and medians is the cause of the majority of hardscape damage in Fullerton. Often, repairs such as patching or concrete grinding can provide temporary solutions to the damage, but the tree will continue to cause damage to the hardscape in the near future. When the hardscape is severely damaged the only solution is to remove and replace the hardscape. At this point, a decision must be made on what to do with the tree. The criteria for determining if the tree should be removed are based on how the new hardscape will be affected. If it is believed the tree will cause the same damage within ten years of hardscape replacement, the tree must be removed. The removal will take place before the hardscape is replaced. After the hardscape is replaced, the site can be planted with a tree species more compatible with the planting site.

Sewer

Tree root intrusion into private and City sewer lines is a concern in Fullerton. Approximately 500 Fullerton residents receive routine chemical treatment of their sewer lines due to invasive tree roots. Some sewer lines require this treatment to be repeated several times each year. City sewer lines also require frequent cleaning to eliminate tree roots.

Residents are placed on this treatment program because their sewer lines become sluggish or back up. If residents experience sewer problems when the City's Maintenance Services Department is closed, they must call a plumber to alleviate the problem. The City receives several claims a month from residents who have had to hire a plumber to clean their sewer lines. Additional claims are received due to sewer back-ups that have caused damage to a resident's home.

Summary

As the above sections regarding utility lines, hardscape, and sewer lines illustrate, Fullerton has numerous trees in its inventory that have caused damage to the City's infrastructure. These problems translate into high maintenance costs, increased public hazards, and unhealthy trees. Trees in unsuitable locations typically decline in health much sooner than trees in adequate planting locations.

To eliminate these problems in future plantings, all departments having involvement with design, planting, or maintenance of trees will coordinate their efforts prior to selecting a tree for a particular site. The Development Services Department will consider the planting site when recommending a tree species for new private developments to ensure the site is suitable for the selected species. The Engineering Department will provide the optimum space requirements and methods of constructing hardscape adjacent to trees, which will provide an

environment in which the tree can be sustained for the minimum amount of time without causing damage to the hardscape. Finally, the Maintenance Services Department must identify acceptable tree species and plant them in adequate sites. In addition, it must consider the maintenance requirements of the tree and the role it plays in achieving species diversity.

Selection Process

Selecting a tree species for future planting in the community forest is a delicate balancing act and an essential part of properly managing the tree population. Proper tree species selection can eliminate many future problems that result in high maintenance costs and provide healthier trees that will reach their optimum size and provide maximum benefit to the community. By identifying and avoiding undesirable tree species, inadequate planting sites, and inappropriate tree species/site combinations, it is possible to minimize problem situations and related high maintenance costs.

The development of the City's Master Street Tree Plan will allow Fullerton to select tree species that are best suited to each planting site. The Maintenance Services Landscape Division staff has identified 46 suitable trees species for planting in the City. The approved list of 46 tree species will become part of the Master Street Tree Plan. The species are listed in Table 1 (by botanical name) and Table 2 (by common name) in Appendix 5 of this document. Appendix 5 also contains a picture and brief description of each proposed tree species. The Master Street Tree Plan will include only trees on the approved list, and will designate the recommended tree(s) for each street or zone in the City.

The list of 46 approved tree species contains information regarding maintenance frequency and site requirements. This list can be used as a reference guide when selecting a tree species for a given street or zone to develop the Master Street Tree Plan. This information will assist staff in finding a species compatible with sites on a given street or zone. There are two primary concerns regarding site clearance: available growing space above the ground, and size of the site on the ground. The species list contains parkway and/or cutout size clearances, maximum height the tree will reach, and the required planting distance between trees. This list is not all-inclusive. Other trees may be considered for parks and open spaces, but must be approved by the Director or his/her representative prior to planting.

If a residential parkway is 5 feet wide and has unlimited above-ground clearance, many tree species on the approved list would be site compatible. However, it is important to make the best use of available space. For instance, if a given site has a 7-foot median it would not be proper tree management to plant a tree that only requires a 2 to 3-foot parkway. This is because tree species that require a small location are typically smaller trees with less canopy cover. It would be more appropriate to use this site for a tree that requires a lot of available growing space, and plant the smaller tree in a more restrictive area.

Since all tree species have specific growing space requirements, the size of the available planting sites in Fullerton was a major consideration when the approved species list was being developed, and will play a major role in the creation of the Master Street Tree Plan. Parkways in Fullerton range from three to six feet in width; however, the majority are 3 to 4 feet wide. All cutouts are 4 by 4 feet, and medians range from 2 to 10 feet in width. Fullerton's Community Forest Management Plan and Master Street Tree Plan must place strong emphasis on the existing size of planting sites because Fullerton is 95 percent built-out and planting sites are already determined. Since it is not financially feasible for Fullerton to change the size of the existing planting sites, it must select appropriate species for the available sites and modify planting site requirements in new developments or redevelopment areas to accommodate the larger tree species on the approved list. Engineering will provide larger standard tree wells wherever possible. At a minimum, 4 by 6-foot cutouts are recommended for new sites. Engineering will consider tree grates, when necessary, for narrow sidewalks too small to accommodate a 4 by 6-foot cutout. Tree grates will be either 5 by 5 feet or 6 by 6 feet.

It is a goal of the Community Forest Management Plan to establish and maintain optimal tree cover in Fullerton. This goal can be achieved by ensuring every available planting site is filled with the most suitable tree. The City will strive to fill each planting site with a species that will provide an appropriate level of canopy cover in relation to the size of the site. In other words, if the available site has a 3 by 3-foot cutout, the most appropriate tree may be a California Fan Palm or a Crape Myrtle. On the other hand, if the site is a 6-foot parkway with no overhead restrictions, the most suitable tree may be a Holly Oak. The object is to plant a tree that will provide the most canopy cover without comprising the surrounding infrastructure.

The list of 46 species was developed to provide an assortment of tree species for the community. This list contains a variety of species with different tree characteristics such as palm, flowering, evergreen, and deciduous trees. These trees were selected based on maintenance requirements, clearance requirements, past performance in Fullerton, growth characteristics, texture, seasonal differences, drought tolerance, potential canopy cover, and susceptibility to pests and diseases. The majority of the approved trees are medium maintenance (four-year pruning cycle) or low maintenance (six-year pruning cycle) trees. There is only one high maintenance (two-year pruning cycle) tree on the list. The approved species list may be modified by adding or removing species from the list. For example, the City may find that a particular species is not adapting well or is unsuitable. It will then be necessary to remove the species from the list and allow another species to be added.

Objectives:

- Develop a Master Street Tree Plan.
- Establish a program to ensure tree species are compatible with planting sites.

- Coordinate infrastructure replacements and activities that directly affect City trees with the Engineering Department.

- Prioritize removal and replacement of trees that are causing irreversible and hazardous infrastructure damage.

- Coordinate with the Development Services and Engineering departments to ensure new developments propose tree wells or parkway strips compatible with recommended species list.

Action Plan:

- Develop a Master Street Tree Plan to provide a designated street tree(s) for each street in the City. The Master Street Tree Plan will include a designation of community forestry themes for major traffic routes and districts within the City. Tree selection will be based on an evaluation of species diversity, growth characteristics, and past tree performance as recorded in the computerized tree inventory. The Master Street Tree Plan shall be completed by March 2000. After the Master Street Tree Plan is completed, it will be presented to Fullerton Beautiful and appropriate City departments for their review. Following their review, the Plan will be presented to the Community Services Commission for review. The final step will be approval by the Fullerton City Council.

- All trees, new or replacement, will be selected from the approved species list as identified in Appendix 5 of this plan. The approved list shall be reviewed to determine if the planting site is compatible with the selected species. The approved list will include all recommended species and identify the minimum site requirements for the species. If the site will not provide adequate growing space for the selected tree species, another more suitable species must be selected. Further species selection will be based on community forestry themes and tree species identified for the block as stated in the Street Tree Master Plan.

- The new standard tree well in Fullerton will be 4 feet by 6 feet without bricks.

- All tree wells shall be located a minimum 15 feet from light standards and commercial driveways; 5 feet from fire hydrants, utility meters, and sewer lateral locations; 40 feet from the beginning curb radius (BCR); and 10 feet from residential driveways. The Director of Engineering shall approve the final location of new tree wells.

- The Engineering Department shall notify the Maintenance Services Department of any applications for new curb, gutter, sidewalks, or driveway installations, or other improvements which might require the removal of or cause injury to any street tree, or interfere with the fulfillment of the Master Street Tree Plan.

- Any public utility maintaining underground pipes or conduits shall obtain permission from the Director of Engineering before performing any maintenance work on the wires, pipes, or conduits which would cause injury to public trees. The public utility shall in no way injure, deface, prune, or scar any public tree until the Engineering and Maintenance Services departments have approved the plans and procedures.

- Removals of trees causing infrastructure damage will be prioritized according to severity of the damage and will also encompass other factors with the tree such as health, age, and species. Trees posing the greatest number of problems will have a higher priority for removal, and those posing fewer or minor problems will be a low priority. Problematic trees will be removed and replaced as part of the species diversity removals. If the removal of the tree does not contribute to species diversity, the tree will be removed based on greatest need and only as the budget allows.

- To facilitate the planting and maintenance of trees on newly proposed private developments, the Director of Development Services shall review landscape plans to ensure conformance with the Community Forest Management Plan.

- All plans and specifications, including the planting of public areas, shall be reviewed and approved by the Directors of Engineering, Development Services, and Maintenance Services, as appropriate, for compliance with the Community Forest Management Plan. All plans involving significant landscaping of public areas, i.e., parks, street slopes or medians, or parking lots, shall be submitted to the Redevelopment Design Review Committee for review and comment.

Community Forest Management Plan

Citizen Support for the Community Forest

Goal: ***Foster citizen support for the local community forestry program and encourage good tree management on privately owned properties.***

Public awareness and support for the Community Forest Management Plan is essential to the success of the plan. In order to gain the support of the community, the City will need to educate the residents on the importance of trees and proper tree management. The City is, therefore, committed to work with organizations and citizens in partnership to educate the community on proper tree selection, care, and maintenance. The City also needs to explain why the actions recommended by the Community Forest Management Plan, specifically plans to remove and replace trees, are essential to sustaining an urban forest resource.

The community forest in the City of Fullerton consists of trees planted on public and private property. Publicly planted trees are typically those planted in residential parkways or easements, parks, arterial highways, slopes, greenbelts, and other common areas. These trees are planted and maintained by the City of Fullerton. Trees planted on private property exist on residential, commercial, and industrial property or are the property of community associations. The care and maintenance of private trees is the responsibility of the property owners while the maintenance of public trees is the responsibility of the City. It is important the community understands the relationship between private and public trees and what it can do to ensure the health of these trees.

Even though the City is not responsible for trees planted on private property, it does have an interest in these trees. As mentioned in the introduction, trees bring many benefits to the community, and privately owned trees make up the majority of the trees in the community forest. The benefits realized from trees come from all trees planted in the community, not just publicly owned trees. Diseased or pest infested trees present a risk to surrounding trees.

Although the City of Fullerton provides pruning and maintenance for trees planted on public property, it is important residents and property owners understand their role in caring for the community's public trees. It is the duty and responsibility of all property owners to maintain shrubs, ground cover, concrete, rocks, bricks, etc. (landscape material) in the parkway strips immediately abutting the owner's property, regardless of whether such property is developed. Maintenance shall include watering as needed and keeping such strips free from overgrown weeds or any obstructions to public safety.

Since most residents and property owners are not tree experts, it is the responsibility of the City to educate them on proper tree care. This knowledge will be carried over to the care residents provide to the trees planted on their property. A community that takes pride in its trees, understands the issues regarding proper tree management, and is involved in the decisions that affect the trees will be supportive of the Community Forest Management Plan.

Objectives:

- Develop a program to promote the Community Forest Management Plan and the Master Street Tree Plan to the community.

- Develop a program to educate the local community on proper tree management for both private and City trees.

- Establish a method of informing residents about their responsibility in providing care for City-planted street trees.

Action Plan:

- Work with the Community Services Department, the City's Public Information Officer, and appropriate citizen groups to educate the community about the Community Forest Management Plan, Master Street Tree Plan, proper tree management on public and private property, and the residents' role in caring for City-planted trees. The process will include articles in "Focus on Fullerton," the Community Services Newsletter, and local newspapers. The Maintenance Services Department will also expand its page on Fullerton's web site and provide additional information lines to the City's Automated Citizens' Information System (FullerFone) regarding the community forest.

- After the Master Street Tree Plan is completed, it will be presented to Fullerton Beautiful and appropriate City departments for their review. Following their review, the Plan will be presented to the Community Services Commission for review. The final step will be approval by the Fullerton City Council.

Community Forest Management Plan

Tree Conservation

Goal: Promote conservation of tree resources.

By achieving the collective goals of the Community Forest Management Plan, Fullerton will fulfill its obligation to promote the conservation of the City's tree resource. Actions such as regular tree pruning and maintenance, proper species selection, educating the community, prohibiting destructive tree practices such as topping, and centralizing tree management will provide Fullerton with a vigorous tree resource.

The benefits gained from trees increase as tree size and canopy cover increase. Since trees increase in size as they mature, the City of Fullerton must strive to protect its existing community forest from loss or depletion. Protection of the community forest refers to the conservation of the tree resource as a whole and not the preservation of individual trees with the exception of historically significant trees.

The preservation of individual trees is impossible because all trees have a limited life. In an urban environment the life of a tree is shorter than in a natural environment because the environment is not conducive to uninhibited growth. As trees in the urban environment grow, they are subject to the stresses caused by restrictive growing space, disease and insects, mechanical injury, vandalism, and pollution. These stresses lead to the decline of the tree. An urban tree will reach a point where the cost of maintenance exceeds the value the tree adds to the neighborhood or community. This stage of the tree's life is defined as the end of its useful life. However, the City of Fullerton is a community with strong ties to its heritage and recognizes the need to protect individual trees with significant historical value. The City refers to these trees as landmark trees (see FMC § 9.06.130).

The City's community forestry ordinance established guidelines to provide for the designation of landmark trees. These trees must meet certain criteria and be recognized as such by the City Council. Criteria for landmark trees shall include consideration of the age, size, shape, species, location, historical association, visual quality, or other contribution to the City's character. Once the City Council has recognized a tree as a landmark tree, removal will only be allowed with the Council's approval.

OBJECTIVE:

- Realize the benefits gained from trees by protecting Fullerton's community forest from depletion.

ACTION PLAN:

- Achieve the collective goals and objectives of the Community Forest Management Plan by implementing its action plans.

- The City will make every effort to preserve historically significant trees by having such trees designated as landmark trees. (The Fullerton Community Forestry Ordinance (FMC § 9.06.130.) in Appendix 6 describes the City's policy for recognizing and protecting landmark trees).

Community Forest Management Plan

Plan Progress

To ensure the goals, objectives, and action plans of the Community Forest Management Plan are achieved, it is necessary to measure the performance of the Tree Program. It is the responsibility of the Tree Program managers to track productivity and expenditures on a continual basis. Managers have several tools available to assist them with these tasks. These tools include semi-monthly productivity reports provided by the contractor, a computerized tree inventory and scheduling program, and a computerized management system to track productivity and expenditures. In addition, the City's Tree Inspector verifies that the contractor's actual productivity matches the reported production. This information allows managers to make adjustments and improvements toward reaching targets.

Staff will prepare an annual status report for the City Manager, City Council, and Community Services Commission. The report will summarize the progress made in achieving the goals and objectives of the Community Forest Management Program. Detailed information will be provided to illustrate planned production versus actual production, and will explain any variations.

Since the Community Forest Management Plan is a long-range project that will affect the forest for at least the next thirty years, there must be a mechanism to incorporate fiscal and technological changes, as well as changes in the expectations and needs of the community. To meet these changing priorities and to incorporate new information on tree care and species, City personnel will review and assess the Community Forest Management Plan every five years. The review and assessment process will include City staff, the Community Services Commission, community groups, and Fullerton residents.

Objective:

- Ensure adequate progress is made each year in achieving the goals and objectives of the Community Forest Management Plan.

Action Plan:

- Publish an annual status report that provides detailed information regarding the progress made in implementing the action plans of the Community Forest Management Plan.

- Conduct a thorough review and assessment of the Community Forest Management Plan every five years.

Planned Production
Five-Year Plan

To achieve the goals and objectives established in the Community Forest Management Plan and implement the recommended "Action Plans," the Landscape Division will need to modify its production in several activities. Table A below illustrates a consolidated five-year production plan for the Tree Program. Under the Community Forest Management Plan, pruning for established trees remains constant for the next five years.

Presently, there are approximately 38,000 trees in inventory. These trees need to be pruned every 3.5 years on the average. Based on the tree inventory and the 3.5 year pruning requirement, 10,860 trees need to be pruned each year.

Table A – Five Year Production Plan

Activity	Year 1	Year 2	Year 3	Year 4	Year 5
Pruning (established trees)	10,860	10,860	10,860	10,860	10,860
Pruning (training new trees)	0	960	1,920	1,920	1,920
Total Pruning	10,860	11,820	12,780	12,780	12,780
Tree Removal	760	760	760	760	760
Stump Removal	48	48	48	48	48
Tree Planting	960	960	960	960	960

The present Tree Program goal is to prune 10,060 trees each year. (There is not a separate goal for pruning newly planted trees.) The plan requires the pruning of an additional 800 trees per year. Furthermore, newly planted trees will need to be pruned once per year for two years, and then will not require pruning for at least four years. Table B identifies the production differences between current goals and the goals of the plan.

Table B – Difference Between Current Goals and Plan Goals

Activity	Year 1	Year 2	Year 3	Year 4	Year 5
Pruning (established trees)	+800	+800	+800	+800	+800
Pruning (new trees)	0	+960	+1,920	+1,920	+1,920
Total Pruning	+800	+1,760	+2,720	+2,720	+2,720
Tree Removal	+410	+410	+410	+410	+410
Stump Removal	+48	+48	+48	+48	+48
Tree Planting	-40	-40	-40	-40	-40

As Table B illustrates, fully implementing the Community Forest Management Plan will require more production effort from the Tree Program, which, in turn, will require additional funds. The following pages include an annual budget for the Tree Program for the next five years and a cost comparison. The cost comparison identifies the cost difference between current program goals (projected for five years) and the goals of the Community Forest Management Plan.

TREE MAINTENANCE
BUDGET: YEAR 1

CONTRACTED SERVICES	WORK UNITS	COST PER UNIT	TOTAL COSTS	TOTALS
PRUNING	10,860	39	423,540	
REMOVAL	760	198	150,480	
STUMPS	48	66	3,170	
PLANTING	960	80	76,800	
WATERING			15,080	
EMERGENCY SERVICES			57,750	
TOTAL CONTRACT SERVICES:				726,820

IN-HOUSE COSTS			
PERSONNEL			
TREE TRIMMER LEAD	40,180		
BENEFITS	11,260		
OVERTIME	500		
PERSONNEL TOTAL			51,940
EQUIPMENT	MAINT.	REPLAC.	
INSPECTOR'S TRUCK	3,580	1810	
CREW TRUCK	3,160	2380	
MISC. EQUIP	1,000		
EQUIPMENT TOTAL	7,740	4,190	11,930
OVERHEAD			
WORKER'S COMPENSATION	20,000		
BLDG MAINT.	6,540		
CONTRACT ARBORIST SERVICE:	5,000		
CUSTODIAL	590		
PROPERTY INSURANCE	3,820		
MANAGEMENT OVERHEAD	49,670		
LIABILITY INSURANCE	19,340		
TOTAL OVERHEAD			104,960

TOTAL PROGRAM COSTS TO FULFILL YEAR 1 ACTION PLAN:	$895,650
CURRENT PROGRAM BUDGET:	$848,900
SHORTAGE:	**$46,750**

TREE MAINTENANCE
BUDGET: YEAR 2

	CONTRACTED SERVICES			TOTALS
	WORK UNITS	COST PER UNIT	TOTAL COSTS	
PRUNING	11,820	39	460,980	
REMOVAL	760	198	150,480	
STUMPS	48	66	3,170	
PLANTING	960	80	76,800	
WATERING			15,080	
EMERGENCY SERVICES			61,460	
TOTAL CONTRACT SERVICES:				767,970

IN-HOUSE COSTS

PERSONNEL			
TREE TRIMMER LEAD	40,980		
BENEFITS	11,460		
OVERTIME	500		
PERSONNEL TOTAL			52,940
EQUIPMENT	MAINT.	REPLAC.	
INSPECTOR'S TRUCK	3,650	1,810	
CREW TRUCK	3,220	2,380	
MISC. EQUIP	1,020		
EQUIPMENT TOTAL	7,890	4,190	12,080
OVERHEAD			
WORKER'S COMPENSATION	20,000		
BLDG MAINT.	6,670		
CONTRACT ARBORIST SERVICES	5,100		
CUSTODIAL	600		
PROPERTY INSURANCE	3,900		
MANAGEMENT OVERHEAD	50,660		
LIABILITY INSURANCE	19,730		
TOTAL OVERHEAD			106,660
TOTAL PROGRAM COSTS TO FULFILL YEAR 2 ACTION PLAN:			$939,650
PROJECTED PROGRAM BUDGET:			$851,750
SHORTAGE:			**$87,900**

TREE MAINTENANCE
BUDGET: YEAR 4

	CONTRACTED SERVICES			TOTALS
	WORK UNITS	COST PER UNIT	TOTAL COSTS	
PRUNING	12,780	39	498,420	
REMOVAL	760	198	150,480	
STUMPS	48	66	3,170	
PLANTING	960	80	76,800	
WATERING			15,080	
EMERGENCY SERVICES			65,210	
TOTAL CONTRACT SERVICES:				809,160

IN-HOUSE COSTS

PERSONNEL			
TREE TRIMMER LEAD	42,640		
BENEFITS	11,890		
OVERTIME	500		
PERSONNEL TOTAL			55,030
EQUIPMENT	MAINT.	REPLAC.	
INSPECTOR'S TRUCK	3,790	1,810	
CREW TRUCK	3,350	2,380	
MISC. EQUIP	1,060		
EQUIPMENT TOTAL	8,200	4,190	12,390
OVERHEAD			
WORKER'S COMPENSATION	20,000		
BLDG MAINT.	6,940		
CONTRACT ARBORIST SERVICES	5,300		
CUSTODIAL	620		
PROPERTY INSURANCE	4,060		
MANAGEMENT OVERHEAD	52,700		
LIABILITY INSURANCE	20,520		
TOTAL OVERHEAD			110,140
TOTAL PROGRAM COSTS TO FULFILL YEAR 4 ACTION PLAN:			**$986,720**
PROJECTED PROGRAM BUDGET:			**$857,630**
SHORTAGE:			**$129,090**

TREE MAINTENANCE
BUDGET: YEAR 5

	CONTRACTED SERVICES			TOTALS
	WORK UNITS	COST PER UNIT	TOTAL COSTS	
PRUNING	12,780	39	498,420	
REMOVAL	760	198	150,480	
STUMPS	48	66	3,170	
PLANTING	960	80	76,800	
WATERING			15,080	
EMERGENCY SERVICES			65,210	
TOTAL CONTRACT SERVICES:				809,160

IN-HOUSE COSTS

PERSONNEL			
TREE TRIMMER LEAD	43,490		
BENEFITS	11,890		
OVERTIME	500		
PERSONNEL TOTAL			55,880
EQUIPMENT	MAINT.	REPLAC.	
INSPECTOR'S TRUCK	3,870	1,810	
CREW TRUCK	3,420	2,380	
MISC. EQUIP	1,080		
EQUIPMENT TOTAL	8,370	4,190	12,560
OVERHEAD			
WORKER'S COMPENSATION	20,000		
BLDG MAINT.	7,080		
CONTRACT ARBORIST SERVICES	5,410		
CUSTODIAL	630		
PROPERTY INSURANCE	4,140		
MANAGEMENT OVERHEAD	53,750		
LIABILITY INSURANCE	20,930		
TOTAL OVERHEAD			111,940
TOTAL PROGRAM COSTS TO FULFUILL YEAR 5 ACTION PLAN:			$989,540
PROJECTED PROGRAM BUDGET:			$860,450
SHORTAGE:			**$129,090**

Appendix 1

Community Forest Management Plan

Pruning Standards

Pruning Guidelines:

City street trees are pruned on a periodic basis based on the tree species. Trees are currently placed in the following five pruning cycles: 1) annual maintenance, 2) high maintenance, 3) medium maintenance, 4) low maintenance, and 5) new tree maintenance.

Annual maintenance trees require an inspection and, if necessary, a pruning each year. The ficus trees on Commonwealth Avenue and in the Central Business District and all species of palm trees fall into this category.

High maintenance trees require an inspection and/or a pruning once every two years.

Meduim maintenance trees require an inspection and/or a pruning once every four years.

Low maintenance trees require an inspection and/or a pruning once every six years.

New trees require pruning to their structure within the first year after planting.

Additional tree pruning is completed on an "as needed" basis. The following are examples of trees which <u>may</u> qualify for unscheduled pruning:

1. Pruning tree limbs that interfere with utility lines, unless the utility company performs the work.
2. Pruning tree limbs that interfere with street light illumination.
3. Pruning tree limbs that interfere with buildings or other private or public structures.
4. Pruning hazardous limbs, such as large dead limbs greater than two inches in diameter, hangers, and structurally unsound limbs.
5. Pruning limbs that interfere with safe vehicular or pedestrian traffic.
6. Sucker pruning.

Any work performed on a tree, whether by a City employee or a contractor, must be completed in accordance with the City's pruning specifications. All specifications are based on International Society of Arboriculture, National Arborist Association, and the American National Standards Institute criteria.

The following specifications apply to City employees, a City-hired contractor, or a contractor hired by a resident of Fullerton. The City or the contractor must employ a full-time permanent Certified Arborist, accredited by the International Society of Arboriculture. The Certified Arborist shall be responsible for the City's crews or the contractor's crews performing assigned work in accordance with the pruning specifications detailed below.

General Requirements:

1. All work shall conform to the ANSI-A300-1995 Pruning Standards (and any later amendments), the Proposal, and these specifications. In all cases the City's representative shall have complete and sole discretion in determining conformance and acceptability of trees pruned by the contractor. Pruned trees rejected by the City's representative shall be excluded from payment.

2. Contractor shall comply with Standards of CAL OSHA and the American National Standards Institute, Z133.1-1988 Safety Requirements.

3. All tree workers shall follow appropriate industry and safety procedures when performing tree maintenance.

4. Inspection: The contractor shall notify the City to request inspection prior to noon of the working day before inspection is required. Unless otherwise authorized, work shall be done only in the presence of the authorized City representative. Any work done without proper inspection will be subject to rejection. Inspection of the work shall not relieve the contractor of the obligation to fulfill all conditions of the contract. All work must be satisfactorily completed and approved prior to payment.

5. Protection and Restoration of Existing Areas: The contractor shall be responsible for the protection of public and private property adjacent to the work site. The contractor shall repair or replace all existing improvements that are damaged or removed as a result of its operations. Repairs and replacements shall be at least equal to existing improvements, and shall match them in finish and dimension. All repairs shall be completed within two (2) working days from the date of damage, or the City will repair the damage and deduct the cost of repairs and overhead from any payment due to the contractor. All repairs shall be inspected and approved by the representative of the City of Fullerton.

6. Safety: The contractor agrees to perform all work outlined in this bid in such a manner as to meet all accepted standards for safe practices during its operations. The contractor shall maintain safe conditions for any premises and rights-of-way, including safely stored equipment, machines, and materials or debris, protected excavations, or other hazards. The contractor shall also comply with all applicable local, county, state, or other legal intents, and terms of the applicable OSHA and CAL-OSHA safety orders, at all times so as to protect all persons, including the contractor's employees, from injury or damage to all property.

   Branch dropping after cutting shall be controlled to avoid injury to people or property. Branches too large for controlled, one-hand dropping shall be roped and lowered by ropes or other equipment.

7. Traffic Control: The contractor shall provide and maintain all other signs, barricades, pedestals, flashers, delineators, and other necessary facilities for the protection of the public within the limits of the work area. The contractor shall also post proper signs to notify the public regarding detours and the condition of the roadway, all in accordance with the provisions of the Vehicle Code and the current State of California Department of Transportation Manual of Warning Signs, Lights, and Devices for Use in Performance of Work Upon Highways.

   Portable delineators shall be spaced as necessary for proper delineation of the travel way. The spacing between delineators shall not exceed 100 feet on tangents or 50 feet on curves, except when used for lane closures.

   When used for lane closures, the fluorescent traffic cones or portable delineators shall be placed at intervals not to exceed the following:

Tapers	25 feet
Edge of closed lane	100 feet
Tangents	100 feet
Curves	50 feet

   If traffic cones or portable delineators are damaged, displaced, or are not in an upright position from any cause, said cones or portable delineators shall immediately be replaced or restored to their original location, in an upright position, by the contractor. The contractor shall furnish all necessary flagmen to give adequate warning to traffic or to the public of any dangerous conditions to be encountered. Flagmen shall perform their duties and shall be provided with any necessary equipment, in accordance with the Department of Transportation's current Instructions of Flagmen. The equipment shall be furnished and kept clean and in good repair by the contractor, at its expense.

   Should the contractor appear to be neglectful or negligent in furnishing warning and protective measures, the City may direct the contractor's

attention to the existence of a hazard. The contractor shall then furnish and install the necessary warning and protective measures at its expense. Should the City point out the inadequacy of warning and protective measures, the contractor shall not be relieved from responsibility for public safety, or abrogate its obligation to furnish and pay for these devices.

Full compensation for conforming to this article shall be considered as included in the various items of work involved, and no additional compensation will be allowed.

The contractor shall secure all permits, at no charge, from the City Engineering Department, and post the required bond prior to the start of work.

8. Working Hours: The contractor shall conduct all of its operations between 7:00 a.m. and 5:00 p.m. during the normal work week of Monday through Friday. If the contractor desires to work hours or days other than these, it may submit a request stating intended operations, hours, and dates, along with a reason for the schedule change, for approval. Without express written approval, such schedule deviations will be subject to the loss of one working day for each day's violations.

   - The contractor shall, prior to commencing work, obtain approval from the Tree Maintenance Supervisor of a weekly work schedule indicating the order and location of work.

   - The general hours of operations shall be 7:00 a.m. to 5:00 p.m., Monday through Friday, or as directed by the City. Any equipment operations generating harsh or unusual noise, such as chippers, leaf blowers, etc., must not be used before 8:00 a.m. No work will be allowed on arterial streets before 9:00 a.m. or after 2:00 p.m. No work may be performed on weekends or City recognized holidays except in the case of emergency or as approved by a representative of the City of Fullerton.

   - The contractor, field lead man or foreman shall meet with the City representative on a weekly basis at a designated time and date for the purpose of reviewing the week's work, receiving special instructions, and to discuss any problems encountered on the job.

9. The contractor shall endeavor to maintain good public relations at all times. The work shall be conducted in a manner which will cause the least possible interference and annoyance to the public. Work shall be performed by competent employees and supervised by an experienced supervisor in tree trimming operations. The contractor shall provide and post temporary "NO PARKING" signs at all worksite locations at least two (2) days prior to work. The contractor shall clearly print the day, date, and hours of work on all signs. The contractor shall remove all signs upon completion of work. No

signs shall be attached to trees. If work cannot or will not be done at any location on the day scheduled, the contractor shall remove the signs. Work at any such location shall not be rescheduled for the next forty-eight (48) hours.

10. Clean-up Standards:

    a) Contractor shall clean all job sites when work is completed, including sap removal from walkways, raking of leaves, twigs, etc. from the lawns and parkways, and the sweeping of the sidewalks and streets.

    b) Each day's scheduled work shall be completed and cleaned up, and under no circumstances shall any sap, brush, leaves, debris, or equipment be left on the sidewalks or street overnight.

    c) Upon completion of the project, the contractor shall remove all painted utility markings done by it or the respective utility owners from the surfaces of sidewalks, driveway approaches, curbs and gutters using the removal method acceptable to the inspector. Any damage to sidewalks, driveway approaches, curbs and gutters due to the contractor's removal operation shall be repaired at the contractor's expense and to the satisfaction of the inspector. Payment for removing utility markings shall be included in other items of work, and no additional compensation will be allowed therefore.

11. Property Damage: Any damage to utility lines that occurs shall be immediately reported to the utility company that is involved. The cost of the repair will be at the contractor's expense. If damage occurs to any adjacent shrubs or trees that are to remain on the site, immediate treatment of necessary replacements of the same type shall be at the contractor's expense.

12. Access to Private Property: Prior to any work that will restrict access to private property, the contractor shall notify each affected property owner or responsible person, informing him/her of the nature of and the approximate duration of the restriction.

13. Disposal of Materials:

    a) All tree branches produced as a result of the contractor's operations under this contract will be reduced, reused, recycled, and/or transformed. Documentation such as bills of lading will be required as proof of final disposal.

    b) Reducing will include, but not be limited to, chipping, grinding, and/or shredding operations. Disposal is to be at a recycling yard for use in a tub grinding and mulching program.

c) Reusing will include, but not be limited to, using chipped, ground, or shredded tree material as mulch. If the contractor has a location outside the City where such mulch may be applied, the contractor is to provide the Tree Maintenance Supervisor documentation from the property owner indicating the location and amount of material that will be used.

d) Recycling will include, but not be limited to, chipped, ground, or shredded tree material used to produce compost utilizing either a low or high technical methodology. Transformation will include, but not be limited to, firewood that is too large to be chipped, ground, or shredded for use as mulch. If the contractor keeps wood for firewood, the contractor must provide to the Tree Maintenance Supervisor proof of such an operation.

Pruning Specifications:

1. Maintenance pruning should consist of one or more of the following types:

   a) Crown cleaning: Crown cleaning shall consist of the selective removal of one or more of the following items: dead, dying, diseased, or weak branches and watersprouts from a tree's crown;

   b) Crown thinning: Crown thinning shall consist of the selective removal of branches to increase light penetration, air movement, and reduce weight;

   c) Crown raising: Crown raising shall consist of the removal of the lower branches of a tree in order to provide clearance;

   d) Crown reduction (crown shaping): Crown reduction reduces the height and/or spread of a tree. Consideration should be given to the ability of a species to sustain this type of pruning;

   e) Vista pruning: Vista pruning is selective thinning of framework limbs or specific areas of the crown to allow a specific view of an object from a predetermined point;

   f) Crown restoration: Crown restoration pruning should improve the structure, form, and appearance of trees that have been severely headed, vandalized, or storm damaged.

2. Complete tree pruning shall consist of the total removal of those dead or living branches that may menace the future health, strength, and attractiveness of the tree.

3. Prevent branch and foliage interference with requirements of safe public passage. Over street clearance shall be kept to a minimum of 17 feet above the paved surface of the street, 14 feet above the curb, and 14 feet above the surface of a public sidewalk or pedestrian way. Exceptions are allowed for young trees that would be irreparably damaged by such pruning action.

4. Remove all dead and dying branches and branch stubs that are ½-inch in diameter or larger.

5. Remove all broken or loose branches.

6. Remove any live branches that interfere with the tree's structural strength and healthful development, which will include the following:

    - Remove limbs that rub and abrade a more important branch.
    - Remove limbs of weak structure that are not important to the framework of the tree.
    - Remove limbs that, if allowed to grow, would wedge apart the junction of more important branches.
    - Remove limbs forming multiple leaders in a single leader type tree.
    - Remove branches near the end of a limb that will produce more weight or offer more resistance to wind than the limbs are likely to support.
    - Remove undesirable sucker and sprout growth paying specific attention not to nick or damage the sprout "burl."
    - Perform selective removal of limbs obstructing buildings, other structures, or traffic signs. Generally, limbs closer than 5 feet to a building or other structure should be removed, unless doing so would severely damage a tree.
    - Perform selective removal of one or more developing leaders where multiple branch growth exists near the end of broken or stubbed limbs.
    - Remove branches that project too far outward beyond an otherwise symmetrical form.

7. Cut back ends of branches and reduce weight where excessive overburden appears likely to result in breakage of supporting limbs.

8. Clear trees of sprout or sucker growth to a minimum height of 8 feet above ground level. Exceptions are allowed for young trees that would be irreparably damaged by such pruning action.

9. Obtain a balanced appearance when viewed from the opposite side of the street, immediately opposite the tree, unless authorized by the City to do otherwise.

10. Remove all vines entwined in the tree and on the tree's trunk. Vine tendrils shall be removed without injury to said tree.

11. Clear all branches and foliage within 4 to 6 feet of primary electrical lines.

12. Qualified tree workers trained to work around primary electrical lines shall be used for performing work in trees underneath primary power lines.

13. Tree workers shall be trained according to the tree care standards accepted by the International Society of Arboriculture and American National Standards Institute, A300.

14. When pruning cuts are made to a side limb, such remaining limbs shall possess a basal thickness of at least 1/3 of the diameter of the wound affected. Such cuts shall be considered proper only when the remaining limb is vigorous enough to maintain adequate foliage to produce wood growth capable of callusing the pruning cut affected, within a reasonable amount of time.

15. Excessively deep flush cuts that produce large wounds or weaken the tree at the cut shall not be made. The branch collar should not be removed.

16. Tree limbs shall be removed and controlled in a manner to cause no damage to other parts of the tree or to other plants or property.

17. All tools used on a tree known to contain an infectious tree disease shall be properly disinfected immediately before and after completing work on the tree. All major pest problems shall be promptly reported.

18. All cutting tools and saws used in tree pruning shall be kept sharpened to result in final cuts with an unabrasive wood surface and secure bark remaining intact. All trees 6 inches in diameter or less shall be pruned with hand tools only. Chain saws will not be permitted on any tree 6 inches or less in diameter. This is to prevent any unnecessary abrasion to cambial tissue that may predispose a tree to insect and/or disease problems.

19. Whenever removing limbs too large to hold securely in one hand during the cutting operation, the limbs shall be cut off 1 to 2 feet beyond the intended final cut; then, the final cut shall be made to prevent unnecessary tearing back of the bark and wood. Such cutting back shall not include the removal of any live, healthy limbs in excess of 6 inches without prior City approval.

20. No more than 25 percent of the live wood may be removed from the crown of any tree, except live oaks, which are limited to no more than 10 percent. As much of the crown should be left in the tree as possible.

21. Any extraneous metal, wire, rubber, or other material interfering with tree growth shall be removed when possible.

22. All defective or weakened trees shall be reported.

23. The crew shall remove bees from infested trees prior to pruning.

24. The use of climbing spurs, spike shoes, hooks or gaffs while pruning is prohibited.

Pruning to Reduce Wind Resistance:

If foliage density still constitutes a wind breakage hazard after the preceding steps have been completed, the necessary thinning cuts and removal of laterals shall be done in a way that retains the natural form. Many small branches will be removed, rather than many large branches.

Pruning for Modification:

- If a tree has an abnormal, unsafe, or unattractive imbalance, it shall be pruned to correct that condition.

- Trees that are trained as espaliers, hedges, sheared forms, or picturesque styles shall be trimmed to maintain the desired effect.

Unacceptable Pruning:

The tree crew shall not perform any procedures that will result in tree decline, including the following:

- Severe cutting back of all growing tips, usually referred to as topping, pollarding, or hat racking.

- Flush cutting, where a cut is made even with the surface of the trunk or limb, removing the branch collar, and branch bark ridge.

- Stub cutting, where branch removal results in the base of the branch removed protruding more than approximately ¼-inch beyond the zone of the branch collar and branch bark ridge.

- Removal of a healthy main leader for reasons other than power line clearance.

Pruning Specifications for Palm Trees:

1. All dead fronds, dead frond sheaths, fruit clusters, flower clusters, and other vegetation, including ivy, shall be removed from the trunks of all palm trees in a manner selected by the trimmer and by approved by the City.

2. All dead fronds and parts thereof, including stubs, shall be removed along the entire length of the trunk of each palm, leaving a clean unsheathed appearance from the base to approximately 18 inches from the green fronds at the top of the tree. Precautions shall be taken so that no live fronds are partially cut and left hanging.

3. Only the full green fronds shall remain at the crown of each palm.

4. All vines growing on palms shall be removed, including vine tendrils, without injury to the palm trees.

5. Palm trees with 8 feet or less of trunk shall be trimmed, but not slicked, and all the stubs shall be left on the trunk. This also applies to *Trachycarpus fortunei*, *Chamaerops humilis*, *Phoenix canariensis*, and *Phoenix dactlifera*. However, all dead fronds must be trimmed close to the trunk.

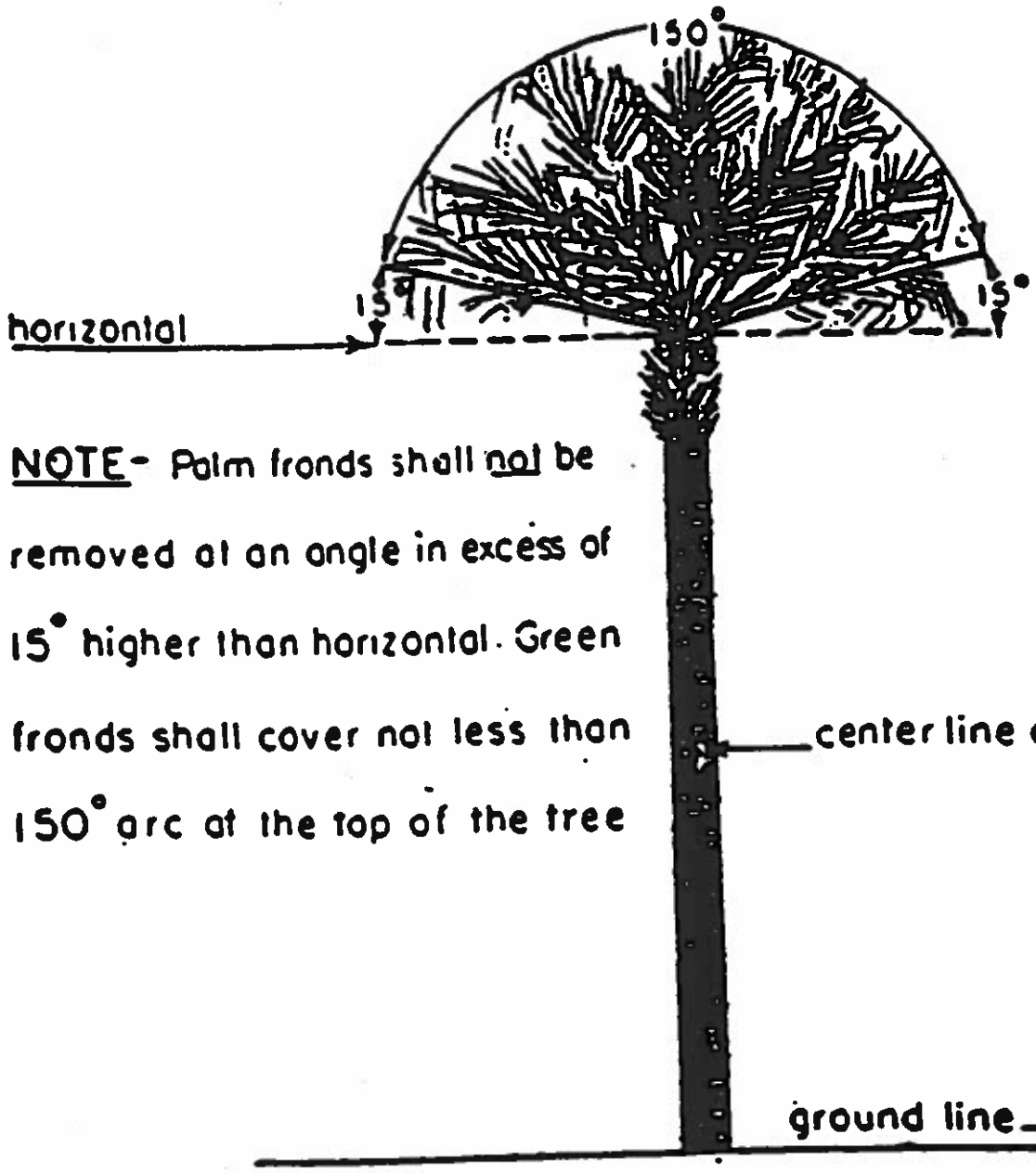
6. The use of climbing spurs, spike shoes, hooks or gaffs while pruning is prohibited.

7. Do not sucker or slick *Chamaerops humilis*.

8. When cutting fronds, they shall be controlled in a manner that will not cause damage to other parts of the tree, to other plants, or to property.

9. Refer to standard drawings A & B for additional information.

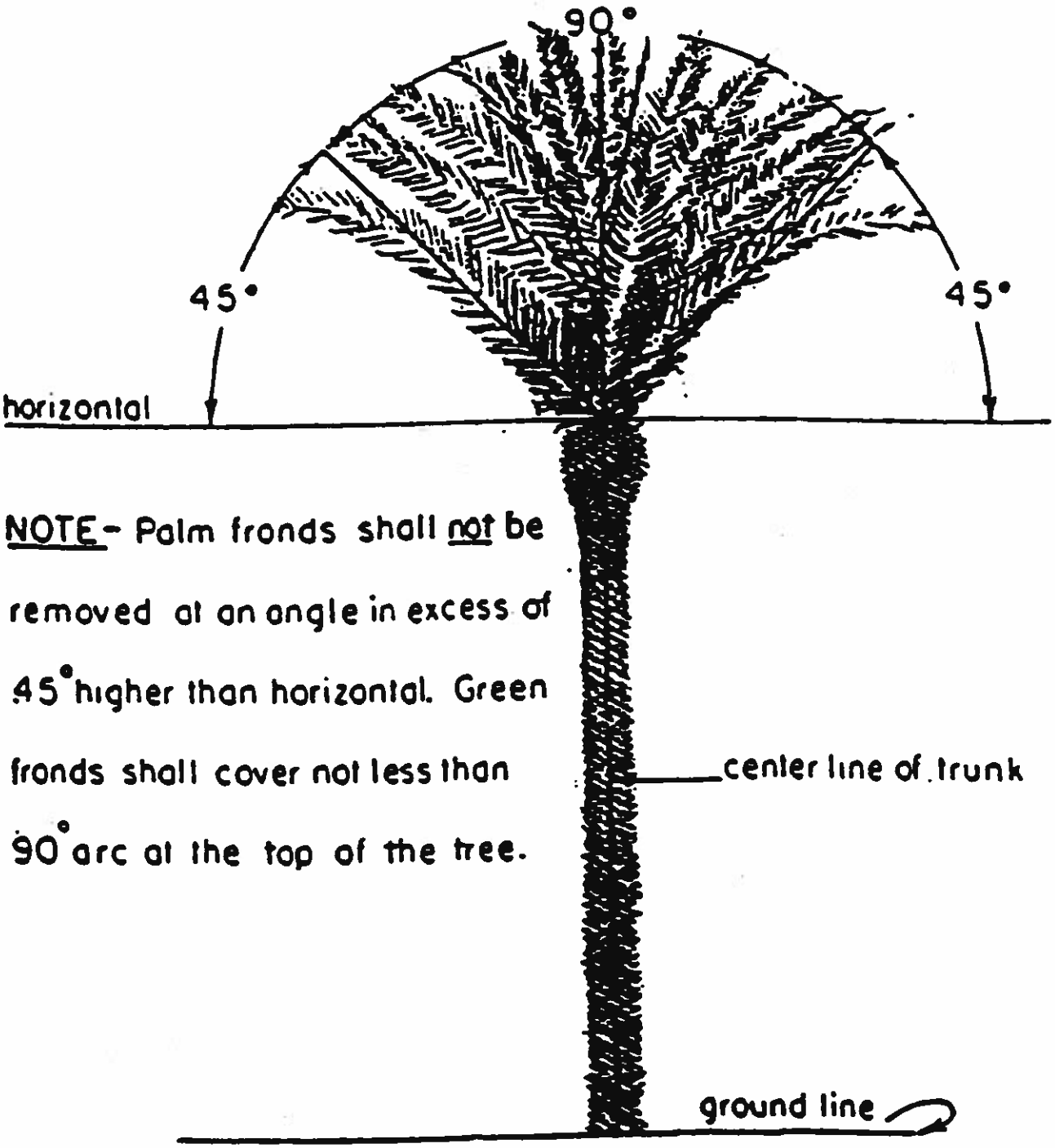
PALM TREE STANDARD DRAWING A



NOTE- Palm fronds shall not be removed at an angle in excess of 15° higher than horizontal. Green fronds shall cover not less than 150° arc at the top of the tree

PALM TREE ANGLE REQUIREMENTS AT COMPLETION OF TRIMMING FOR FAN PALMS AND PINDO PALMS

PALM TREE STANDARD DRAWING B



NOTE - Palm fronds shall not be removed at an angle in excess of 45° higher than horizontal. Green fronds shall cover not less than 90° arc at the top of the tree.

PALM TREE ANGLE REQUIREMENTS AT COMPLETION OF TRIMMING FOR PHOENIX PALMS

Appendix 2

Community Forest Management Plan

Planting Standards

Planting Specifications:

The purpose of these standards is to provide tree planting standards and specifications to ensure all trees planted will thrive and develop into healthy mature trees. Planting procedures are dependent on site, species, and the type of tree being planted. For general planting, 15-gallon container trees are recommended. The following are recommended specifications for planting street trees.

1. In light (sandy or loam) soil, dig the planting hole as deep or one inch shallower than the depth of the root ball. In heavy (clay or clay loam) soil, dig the planting hole two to three inches shallower than the depth of the root ball for 15 gallon containers. In heavy soil the base of the tree should be above grade. The hole should be a minimum of three times the width of the widest part of the container (more width and less depth is best). Planting holes shall not be dug with an auger or in wet soil.

2. When necessary, prune off dead or broken branches and inspect for girdling roots. (**DO NOT** plant trees with girdling roots; return them to the nursery.) Set the tree so the longest branches are parallel with the curb, sidewalk, or roadway. At windy sites, place the longest branches in the direction that the wind blows. To back-fill in light soil, mix the native soil with no more than 10 percent organic amendment. **DO NOT** place nitrogen fertilizer in the planting hole.

3. Set the root-ball on a firm base and back-fill. Work the soil in around the root- ball and firm the soil after each three inches of back-fill added. Firm the back-fill with the foot after the last layer of soil is added.

4. Form a low berm exposing the root crown around the trunk and a high berm approximately 12 to 18 inches from the center of the trunk in the position of the planting hole. The water basin should be 3 to 5 inches deep. Water the inner basin to be sure that the soil is moist and most air pockets are filled. (Most newly planted trees die from over or under watering.) Do not fill so much that water stands in the basin. After the initial watering, make sure that deeper soil is drying out before adding additional water.

5. It is essential to keep the water basin free of turf and weeds. A three to four inch deep (well-composted) mulch layer placed at least two inches from the trunk is recommended to reduce weed competition and increase effectiveness.

6. Refer to drawing.

Staking Specifications:

It is intended that all trees planted in the community forest be able to support themselves without staking. However, in some situations trees may not be able to stand upright on their own and will require either trunk support or root anchor staking. Support or anchor staking will attach the tree to the stake. Protection staking may be used for some trees; however, the tree will not be attached to the stake and more durable staking material may be used.

1. **Trunk Support Staking:**

   When the trunk of a newly planted tree bends, use trunk support staking. Install two stakes into native soil outside the root-ball. For 15-gallon container trees, this will be approximately eight to ten inches from the trunk. Install one flexible tie near the top of each stake and tie or loop it loosely around the trunk of the tree. Cut the top of the stakes so that they do not rub on branches. Trunk support staking should be removed within one year of planting. Trees which cannot stand on their own without trunk support after two growing seasons are either not adapting to the site or are genetically inferior trees which should be removed.

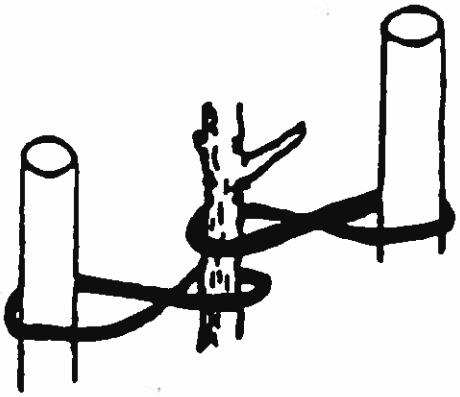
2. **Root Anchor Staking:**

   When a tree is planted in light soil, root anchor staking may be required. Install two or three short stakes (not taller than 18 inches) into native soil outside the root ball. Install one flexible tie near the top of each stake and loop or tie it loosely around the trunk no higher than 18 inches above grade. Root anchor staking should be removed within one year of planting. Trees which cannot stand on their own without root anchor support after two growing seasons are either not adapting to the site or genetically inferior trees which should be removed and replaced.

3. **Root Barriers:**

   The improper use of root barriers has caused the death and stunting of many street trees. For street trees, the proper use of root barriers (physical or chemical) greatly increases the amount of time before damage to hardscape occurs. When used, root barriers shall be installed a minimum of three inches inside and parallel with the face of the curb or sidewalk nearest the tree. The root barrier shall extend approximately six to ten feet in both directions from the centerline of the trunk. No root barrier will be installed in the planting hole or in such a manner that it will inhibit root development within three feet of the centerline of the trunk or on more than two sides of the root crown.

STANDARD TREE PLANTING WITH STAKING



DOUBLE STAKING
EZ-BAND TREE TIES NAILED TO LODGE POLE PINE STAKES WITH GALVANIZED ROOFING NAILS

TWO 2" DIAMETER LODGE POLE PINE STAKES 8' LONG WITH GREEN PRESERVATIVE STAIN

"ARBOR-GUARD" BY DEEP ROOT CORPORATION. IN TURF AREAS ONLY

6" WATER BASIN

6"

FINISH GRADE

BACKFILL WITH CLEAN NATIVE SOIL

PLANTING HOLE SHALL BE EXCAVATED SQUARE AND ALL SIDES LEFT ROUGH TO PERMIT ROOT PENETRATION

ROOT BALL

ROOT BALL

12" MIN

TWICE ROOT BALL SIZE

Appendix 3

Community Forest Management Plan

Nursery Stock Standards

Nursery Stock

The purpose of these specifications is to obtain vigorous, healthy trees which can be easily trained to grow into attractive trees with structurally strong roots and crowns.

If the sample trees inspected are found to be defective, the buyer reserves the right to reject the entire lot or lots of trees represented by the defective samples. Any plants rendered unsuitable for planting because of this inspection will be considered as samples and will not be paid for. The buyer shall be notified at least ten (10) days prior to the actual shipment date, or the buyer may request to select the plants at the nursery before delivery.

General Requirements for Nursery Stock:

- All trees shall be true to type or name as ordered or shown on the plans and shall be individually tagged or tagged in-groups by species and cultivar (variety).
- All trees shall be healthy, have a form typical for the species or cultivar, be well rooted, and properly trained.
- All trees shall comply with federal and state laws requiring inspection for plant diseases and pest infestations. Inspection certificates required by law shall accompany each shipment of plants. Clearance from the County Agricultural Commissioner, as required by law, shall be obtained before planting trees delivered from outside the county in which they are to be planted.
- The root-ball of all trees shall be moist throughout and the crown shall show no signs of moisture stress.

I. **Tree Crown: Broad-leaved, Decurrent Trees**

A. A single straight trunk that has not been headed and which can be pruned to a leader.

1. Potential lateral scaffolds (height of lowest scaffold depends on use).

a. Small growing trees (crape myrtle, flowering fruit, etc.). At least two inches apart vertically, which could be trained in the landscape to three to seven branches four inches or more vertically.

b. Large growing trees (ash, oak, callery pear). At least 6 inches apart vertically, which could be trained in the landscape to 5 to 9 branches 18 inches or more apart vertically.

c. Radially distributed around the trunk.

d. Not more than two-thirds the diameter of the trunk.

2. No laterals below the lowest potential scaffold should be larger than one-fourth the trunk diameter at the point of attachment.

   a. A single, straight trunk that has not been headed or which can be pruned to a leader.

3. Each tree must be able to comply with No. 1 and 2 above without having or having had to remove, now or within the previous growing season (at least 6 months), more than 25 percent of the branches of size similar to or larger than those of potential scaffold branches.

   a. It would be desirable to have the tree stand upright without support.

II. Tree Crown: Broad-leaved or coniferous, excurrent (central trunk) trees:

A. Crown has a single, straight trunk with no double leaders (co-dominant stems) or vigourous, upright branches competing with the leader.

B. Radial and vertical distribution of branches to form a symmetrical crown.

III. Roots: Containers, boxed, or balled and burlapped trees regardless of species or mature size:

A. Free of roots visibly circling the trunk, and free of "knees" (roots protruding above the soil.

B. If in tapered container, slip the root ball out; the root-ball periphery should be free of circling roots larger than an inch in diameter.

C. Untie the tree trunk from the stake; the trunk should not touch the top rim of the container.

D. Tip the root ball or container on its side and with a small jet of water expose the roots within 2 inches of the trunk to a depth of 2.5 inches below the top most root attached to the trunk. The trunk and main roots should be free of circling and kinks. Replace soil and wash from around the trunk with a similar soil mix (not more than 10 percent of the total root-ball volume should need to be added).

E. If the trees pass the above inspections, the roots will be further inspected by removal of soil from the roots of not less than two (2) trees or two (2) percent of the total number of trees of each species or a variety from each source. The trunk and main roots shall be free of circling and kinked rooted.

Appendix 4

Community Forest Management Plan

Removal and Grinding Standards

Tree Removal & Grinding Specifications:

Trees shall be removed and stumps ground as described as follows:

1. Tree removal shall consist of the total removal of all above-ground plant parts in accordance with accepted industry standards, leaving a stump that is not more than 30 inches nor less than 24 inches above ground level. Extreme care shall be taken to prevent limbs, branches, and trunks from falling and causing damage to adjacent public or private buildings, driveways, sidewalks, streets, and other property or structures.

2. Tree Stump Removal:

   a) The stump shall be ground to a depth of no less than 24 inches below grade to remove the stump and roots. All exposed above-ground tree roots shall also be ground out or removed by hand tools to a depth of 12 inches. The stump removal area for a street tree, shall be between the sidewalk and curb, or a distance of four feet from the trunk, whichever is shorter. The sides of the stump removal area will also be a distance of four feet from the trunk.

   b) Backfill material shall be compacted to provide for minimal settling. It shall consist of an equal mixture of soil and stump material, which shall be two (2) inches above grade to provide for any soil settlement. No stump holes will be left overnight. After the settling, additional grade topsoil shall be used to bring the area up to the same level as the surrounding area.

   c) Contractor shall provide daily log sheets of work completed to the Maintenance Services Department.

   d) Contractor shall be given forty-five (45) working days to complete each tree and stump removal list issued by the Maintenance Services Department.

3. Trees and stumps shall be removed and controlled in a manner to prevent damage to other plants or property.

4. Cleanup of branches, limbs, logs, or any other debris resulting from any operations shall be performed promptly and properly. The work area shall be kept safe at all times. Under no circumstances shall the accumulation of brush, limbs, logs, or other debris which may become a hazard to the public be allowed. All debris from tree operations shall be cleaned up daily, before the work crew leaves the site. All lawn areas shall be raked. All streets and sidewalks shall be swept, and all brush, branches, rocks, or other debris shall be removed from the site. All areas are to be left in a condition equal to or better than prior to the beginning of tree operations.

5. All tools used on a tree known to contain an infectious tree disease shall be properly disinfected immediately before and after completing work on the tree. All major pest problems shall be reported immediately.

Disposal of Debris:

All debris generated is to be picked up and disposed of the same day the tree is removed and the stump is ground. A brush chipper may be used with other means of disposal. Firewood may be left at the property at the owner's request.

Utilities:

1. All necessary precautions shall be taken to ensure all water, gas, electric, and/or telephone utilities, etc., are not damaged.

2. Underground Service Alert shall be called at (800) 422-4133 prior to starting work to verify all existing utilities, especially City utilities. A record of all identification numbers issued by Underground Service Alert shall be retained.

Damaged Property:

Responsibility for damaged property includes, but is not limited to, repairs and/or replacement of damaged items caused by equipment or personnel. This includes sprinkler systems, shrubs, plants, sidewalks, block walls, fencing, etc., belonging to the City or private property owners. A sprinkler test verification may be performed before work progresses to assure that the system is operating properly. All repairs shall be completed within two days from the date of damage.