

CITY OF THOUSAND OAKS

FORESTRY MASTER PLAN IMPLEMENTATION RECOMMENDATIONS



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FINAL DRAFT

March 2017

CITY OF THOUSAND OAKS FORESTRY MASTER PLAN

IMPLEMENTATION RECOMMENDATIONS

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Forestry Master Plan

Implementation Recommendations

This document provides recommendations and information to assist with implementing the guidelines and achieving the goals provided within the City of Thousand Oaks Forestry Master Plan. The topics covered include the street tree inventory, budgeting, phasing, and the landscape median demonstration projects.

1. Street Tree Inventory

This section describes what a tree inventory is, and why it is so important to good forest management.

1.a The Importance of the Inventory

The tree inventory is a tree-by-tree portrait of the community forest. It is the foundation upon which all other work on the forest rests. The importance of the inventory is based on the premise that the City needs to have a complete picture of the trees it already has in order to make decisions about changes or additions. The inventory is also a tool used to ensure proper care for existing trees in the forest; without it, management is based on guesswork.

With a complete inventory, the Public Works Department has direct access to the numbers and locations of all trees. This information allows the Public Works Director or designee to examine the detailed needs and condition of individual trees. It can be used to find all trees in a particular class, such as those of a certain species, or those in need of regular

maintenance. The inventory can also be used to give an overview of the entire forest, to determine, for example, the percent of citywide canopy coverage.

The Thousand Oaks tree inventory is to be divided into several parts, with different levels of information to meet the City's various needs. All publicly maintained trees are to be individually inventoried and assessed for condition, size, and species. This information provides the basis for the day-to-day and year-to-year management of the community forest.

Special private trees such as oaks and other landmark trees protected by City ordinance but not directly under the care of the City should be inventoried on a more general basis, located by parcel number and recorded as to general condition. More specific information may be added as these trees are inspected in the course of administering the ordinances. This information should be used to assess the general state of the City's oak population, and to help track the response of individual trees to development pressures.

Other private trees should be inventoried only as to approximate numbers, types and sizes as can be determined from remote methods. This information can be supplemented by field-observation notes gathered when compiling the inventory or making routine inspections. This part of the inventory is of general use in assessing the tree cover of the entire community.

1.b Uses of the Inventory

The City will make regular use of the inventory data to track the progress of both the forest and the forestry program. The inventory data should include for each tree: species, diameter, condition, maintenance needs, location, and growing space limitations or conflicts. Locations of available planting space, for example unplanted tree wells, is also helpful information to collect for planning future plantings. More information on items which may be tracked and analyzed with the inventory include the following:

Condition of trees. The planting and maintenance requirements of individual trees, neighborhoods, and the whole city are readily apparent from the inventory. This allows work priorities to be established and resources allocated based on the needs of the trees. It also allows improvement or decline to be documented over time, testing the effectiveness of the forestry program.

Species performance. Valuable knowledge about the response of a species to different growing conditions and maintenance treatments can be accumulated in the inventory. Characteristic problems and susceptibilities will be useful when selecting trees for new or replacement plantings. Conversely, as the conditions associated with a particular planting site or area become better known, better species selection will also result.

Age and species composition. Knowledge of the make-up of the overall city or particular streets and neighborhoods will help avoid or alleviate



monocultures and even-aged stands. The achievement of the city's goals in relation to forest composition can be monitored.

Insect and disease problems. The inventory will help detect infestations as they occur and reveal their geographic distribution over the city. This allows the Public Works Director or designee to judge the seriousness of a problem and devise strategies for treating infected stock and limiting further spread. With the inventory's information on the location of species in the city, the susceptibility of various areas of the forest to a given pest or disease can also be judged, and preventive actions taken.

Tree removals and replacements. Since removing and replacing a tree usually is extremely expensive, as well as a point of heightened public concern, being able to predict and plan for the event is essential. By indicating when removal should be considered - that is, the point when the cost of maintaining a declining tree exceeds the tree's benefit to the community - the inventory can help rationalize the removal process and avoid disruptive emergency removals.

Condition of the infrastructure. Pavement damage, utility conflicts and other issues can be addressed in a timely manner, preferably in conjunction with other tree work.

Risk and liabilities. The above information allows the community forester to correct problems which could pose a public hazard for which the city might be liable. By documenting that the city exercised

reasonable care in servicing a tree, and in detecting and correcting problems, the inventory can provide a valuable defense against claims that do arise.

Citizen complaints and comments. The inventory will increase the accuracy and response time to citizen concerns or information requests about particular trees. This may often save the time of an actual field visit. The complaints associated with various species will also become evident over the years.

Expenditures of labor and materials. The actual cost of planting and maintenance activities can be documented and accounted for. When analyzed by tasks performed and quality achieved, accurate projections of future work programs and budgets become possible. The data should also be assessed for possible means of increasing work efficiency.

Management simulations. Using the inventory database, simulations can be developed which show the effect of various management decisions on future forest outcomes. The impact of various current levels of planting and maintenance (and therefore, budget) on the forest in ten, twenty and thirty years could be predicted. For instance, the effect of decisions about species selection and spacing on future canopy coverage of pavement can be judged.

Some of the beneficial outcomes of regularly using the tree inventory include:

Efficient scheduling. It enables efficient work schedules and procurement of materials based on current management needs.

Accurate and justified annual budgets. The documentation of these needs not only leads to operational efficiency, but results in well-grounded annual budget requests for the community forestry program.

Preventative maintenance. Over time, the overall benefits of the forest are increased by the increased quality of care, even though the actual time and money spent servicing trees may decline because problems are being addressed before they become major.

Decreased liability. The city's potential losses from liability claims are also greatly reduced, both from healthier and therefore less hazardous trees and from the ability to accurately demonstrate the degree of care exercised by the City in relation to a particular tree.

Timely removals. By anticipating the likelihood of major removals as trees decline, the City may be able to spread out the expense of removals over a number of years. By replacing trees when they are removed, the result would be a diversity of ages in a given area, reducing the future visual and budgetary traumas created by wholesale removals.

Balanced species composition. Likewise, by managing the diversity of species, the City can reduce its exposure to large-scale removal and replacement costs should a given species suddenly fail.

1.c Work Products Based on the Inventory

The diverse uses of the inventory can pay off in a series of specific work products used to manage the community forestry program.

Daily work schedules should be based on the priorities derived from the inventory, grouped into efficient combinations of tasks and geographical areas.

Quarterly analysis and reports should be prepared by the Public Works Director or designee for distribution to other City staff. These will provide a running account of work performed, problems encountered, future tasks anticipated, and any necessary administrative or policy decisions.

Annual reports, work programs, and budget requests should assess the program's success in meeting City goals and policies and forecast the effort and resources required for the next fiscal year. This provides the opportunity to use the inventory to best effect in quantifying and prioritizing the City's forestry objectives and in documenting the results of the city's forestry investment.

Updates and revisions to the *Forestry Master Plan* will benefit immensely from the inventory's data on species and age composition, maintenance practices, and other information. The data is critical to the assessment and adjustment of city planning to achieve the best results in the field.

1.d Methods for the Inventory

The street tree inventory is established by collecting and recording detailed information about each City-maintained tree in the city. While there are a number of methods that could be utilized to conduct the inventory, software programs that are designed specifically for tree inventory data collection will be the easiest to use and maintain over time. The City should select a program that includes management features for reporting and scheduling, such as service requests and maintenance activities. The inventory should also include GPS mapping of tree locations stored in a GIS map layer. There is a developing market for software with data interface and management that allows users to access and update inventory data from the field with mobile apps¹.

The US Forest Service provides an online list of tree inventory and management software, including some public domain / freeware options. When selecting a software program, evaluate the program's ease-of-use, system requirements, and technical support and training offerings.

The following scope of work describes the standards by which each tree should be assessed. This scope may be used to guide the city's inventory, whether it is conducted by staff or consultants. The value of the inventory's information depends on the arboricultural knowledge of the people collecting data and on the consistency of information gathered by each person.

1 North Carolina Forest Service, "Urban and Community Tree Inventories", http://ncforestservice.gov/Urban/urban_tree_inventories.htm accessed January 20, 2017

It is therefore very important that each observer follow the data-collection format as thoroughly and objectively as possible.

The information called for is a reasonably complete assessment of the tree and its immediate surroundings. It provides all the data necessary for various management uses of the inventory. If the information is properly collected, it will provide a solid basis for management of the forest, from development of daily work schedules to projection of future forest budgets.

Scope of Work

Per the International Society of Arboriculture, the most basic tree inventories are lists of the locations and descriptions of individual trees. More advanced inventories include information on site characteristics, past maintenance, and anticipated maintenance needs for each tree. Complete inventories provide a direct means for assessing the relationship between trees, planting locations, and maintenance expenditures. A recommended standard format for collecting inventory data is outlined on the following page.

1.e Maintaining the Inventory

Once a comprehensive inventory is in place, the responsibility for maintaining its accuracy rests largely



Inventory Checklist

Location: Address (if applicable) and GPS coordinates

Botanical name (family, genus, species) and **common name**

Size: Use the following classes: *0 to 15ft.*, *15 to 30ft.*, *30 to 45 ft.*, *45 to 60ft.*, *60ft. or greater*, to 1) estimate tree height and 2) estimate the canopy spread.

Girth: Measure trunk at 4-1/2 ft. above ground level (DBH). Use the following classes: *0" to 3"*, *3" to 6"*, *6" to 12"*, *12" to 18"*, *18" to 24"*, *24" to 30"*, *30" to 36"*, and *36"+*.

Number of trunks (if there is more than one trunk visible at ground level)

Form: Select one: *Symmetrical*, *Minor Asymmetry*, *Major Asymmetry*

Crown class: Select one: *Dominant*, *Co-Dominant*, *Intermediate*, *Suppressed*

Trunk Condition: Select applicable: *single*, *multiple*, *leaning*, *weak trunk crotches*, *cavity/wounds*, *surficial damage*, *fire damage*, *physical contact with ground*, *water stressed*, *visible insect/disease damage*

Pests/disease observations: Provide notes

Condition of Branches: Select applicable: *dead*, *broken*, *tip decline*, *fire damage*, *physical contact with ground*, *water stressed*

Foliage:

Foliage cover: Select one: *normal*, *chronic*, *necrotic*

Foliage density: Select one: *normal*, *sparse*, *patchy*

Annual shoot growth: Select one: *excellent*, *average*, *poor*

Epicormics Select: *yes* or *no*

Overhead obstructions:

Overhead utilities: high voltage (primary), or low voltage (secondary, telephone, or cable TV)

Interference of natural crown spread due to buildings or private trees.

Date of last sidewalk and curb repair

Type and size of growing space: median, sidewalk tree well, etc. Record to nearest 6".

Presence of underground utilities

Vacant sites: The Public Works Director or designee will determine what constitutes a vacant site. All vacant sites will be described for presence of overhead obstructions and underground utilities.

Sun and wind exposure

Roadway width and type (local, collector, or arterial)

Landmark tree status or potential: Based on City criteria.

Dates of servicing or inventory assessments.

Citizen complaints or inquiries.

Permits.

Appropriate planting and removal dates: Based on species' life expectancy.

Additional notes and comments.

Maintenance Classifications

All trees should be classified for one or more of the following:

Routine Prune: Trees that will need inspection and/or pruning in the next maintenance cycle. Recently pruned trees or those with growth habit that requires little maintenance receive this designation.

Corrective Prune: Trees that have been damaged, improperly pruned, or have developed undesirable growth habits.

Crown Thinning: Trees that have not been structurally pruned recently or whose growth habit quickly produces a dense, thick crown.

Immediate Prune: Trees that pose potential liability risks from large, excessive deadwood or visible decay.

Pruning for Clearance: Trees with low-hanging branches or suckers obstructing traffic (vehicular, bicycle or pedestrian) or city signs. Vehicle obstruction occurs below 13 feet in height, pedestrian at 9 feet.

Removal: Trees that meet the City's removal criteria.

on the City's maintenance crews. Every servicing of every tree must be recorded in the inventory, along with pertinent information on the tree's current condition. Based on the capabilities of the inventory software and the City's resources, the Public Works Director or designee should develop a standard procedure for the department to follow for maintaining the inventory database. It will also be important for all staff involved with the maintenance and use of the inventory to be properly trained to fulfill their responsibilities.

In addition to the day-to-day maintenance of the tree inventory, the City should plan for periodic assessments of the inventory software and procedures. Resources should be allocated for updates or overhauls to the inventory as technologies and City conditions evolve over time.

2. Landscape Maintenance Budgeting Assessment

This section provides a summary of Thousand Oaks' landscape maintenance annual budget from the 2013-2016 fiscal years, including the general fund and landscape maintenance districts. Capital improvement budgets are not included. The annual budget over these summarized years has been adequate for meeting the Department of Public Works' landscape maintenance objectives.

The average total budget for landscape maintenance over the 2013-2016 fiscal years is \$6,683,175. The maintenance cost per acre of landscape is \$12,445.

Fiscal Year	2013	2014	2015	2016
General Fund Total	\$1,894,596	\$2,001,009	\$2,076,161	\$2,325,746
Landscape Maint. District Total	\$4,346,267	\$4,326,252	\$4,517,630	\$5,245,037
Total Budget	\$6,240,863	\$6,327,261	\$6,593,791	\$7,570,783
Average Total Budget	\$6,683,175			

3. Phasing Plan

This section outlines the City's priorities for the maintenance and enhancement of its community forest resource. It is organized by phases through which the City should accomplish key tasks.

Priority: Street Tree Inventory

Years 0-2

- Develop a plan for the tree inventory system. Review available inventory approaches and systems, as well as the City's budget for the street tree inventory start-up and on-going maintenance. Determine whether the initial inventory will be conducted by staff or by a consultant.
- Conduct a comprehensive street tree inventory. Develop the procedure for maintaining the tree inventory data and train staff that will be responsible for implementing this procedure.

Priority: Critical Tree Maintenance

Years 0-5

- Conduct corrective tree maintenance. Address trees identified through the street tree inventory

for "Immediate Prune" and remove and replace trees that were identified as posing a public hazard and qualifying for removal. The number and location of these trees is to be identified through the street tree inventory process, or from issues or concerns identified by an authorized City agent. Replacement trees should be selected based on the guidelines provided in the *Forestry Master Plan*. Note: The City will remediate any threats to public health and safety that are posed by publicly-maintained trees at the time they are identified. This activity is a priority in the period immediately following completion of the street tree inventory, but is not limited to this priority phase; it will be occurring as needed through all phases.

Priority: Increasing Community Forest Resiliency and Character

Years 0-3

- Implement the Landscape Median Demonstration Projects as described in the *Forestry Master Plan* and the following section of this document. These projects are intended to set a precedent for developing distinct yet complementary planting



characters for each of five regions in the City of Thousand Oaks. All plantings are comprised of California-friendly plantings that have reduced water needs and should follow guidelines in the *Forestry Master Plan* to support the City's safety and maintenance goals.

Years 0-5

- Fill vacant tree and understory planting areas, tree wells, medians, and parkway strips. The number and location of vacant planting areas is to be identified through the street tree inventory process. Continue the regional planting characters that were developed by the Landscape Median Demonstration projects. Follow guidelines in the *Forestry Master Plan*.

Priority: Sustaining a Beneficial Community Forest

Years 0-10

- Remove and replace drought-stressed plants and trees, as well as those with high-water needs. Continue the regional characters with California-friendly plantings that were developed by the Landscape Median Demonstration projects. Follow guidelines in the *Forestry Master Plan*.
- On-going tree and landscape maintenance. After the City has implemented its street tree inventory program, addressed deficiencies identified through the inventory, and established the new California-friendly regional planting characters, community forestry efforts can be focused on the day-to-day maintenance that is necessary to

keep the forest healthy and providing maximum benefits to the community. On-going maintenance activities should be guided by the *Planting & Maintenance Manual*, *Forestry Master Plan*, and the recommendations provided in this document. While on-going maintenance will be occurring through all the phases, when the priority projects of the previous phases are completed, the City will have more resources available to dedicate to on-going maintenance, and may be able to reduce the level of contract labor required for community forestry.

- Periodic updates to the tree inventory, resources and best practices. Knowledge, environmental conditions, priorities, technologies, and best practices are constantly advancing. The City should be evaluating how their current resources and practices compare to the latest industry standards, and be ready to make the appropriate updates when needed.

4. Landscape Median Demonstration Projects

The Thousand Oaks Public Works staff selected five arterial median sites to serve as demonstration projects for implementing the new California-friendly planting guidelines and palettes of the 2017 *Forestry Master Plan* update. The locations are distributed throughout the city (see Figure 4.1), and represent typical street plantings that are aging and/or drought-stressed, and are consequently in need of enhancement.

This section includes descriptions of the existing site conditions, design concepts, and funding strategies for the landscape median demonstration projects. The *Forestry Master Plan* provides design guidelines and suggested plant species for each projects

4.a Dos Vientos

Existing Site Conditions

The Dos Vientos project site is the Lynn Road median between Via Las Brisas and Via Goleta (Figure 4.2). The median planting area is approximately 15 feet wide and 585 feet long, comprising an estimated area of 6,171 square feet. The right-of-way is adjacent to residential properties to the north and open space to the south. The site offers views to the surrounding open space.

At this location, the speed limit is 50 miles per hour, and there are two vehicle traffic lanes and one bike lane in each direction. There is a sidewalk on the north side of the road, but not the south. This segment

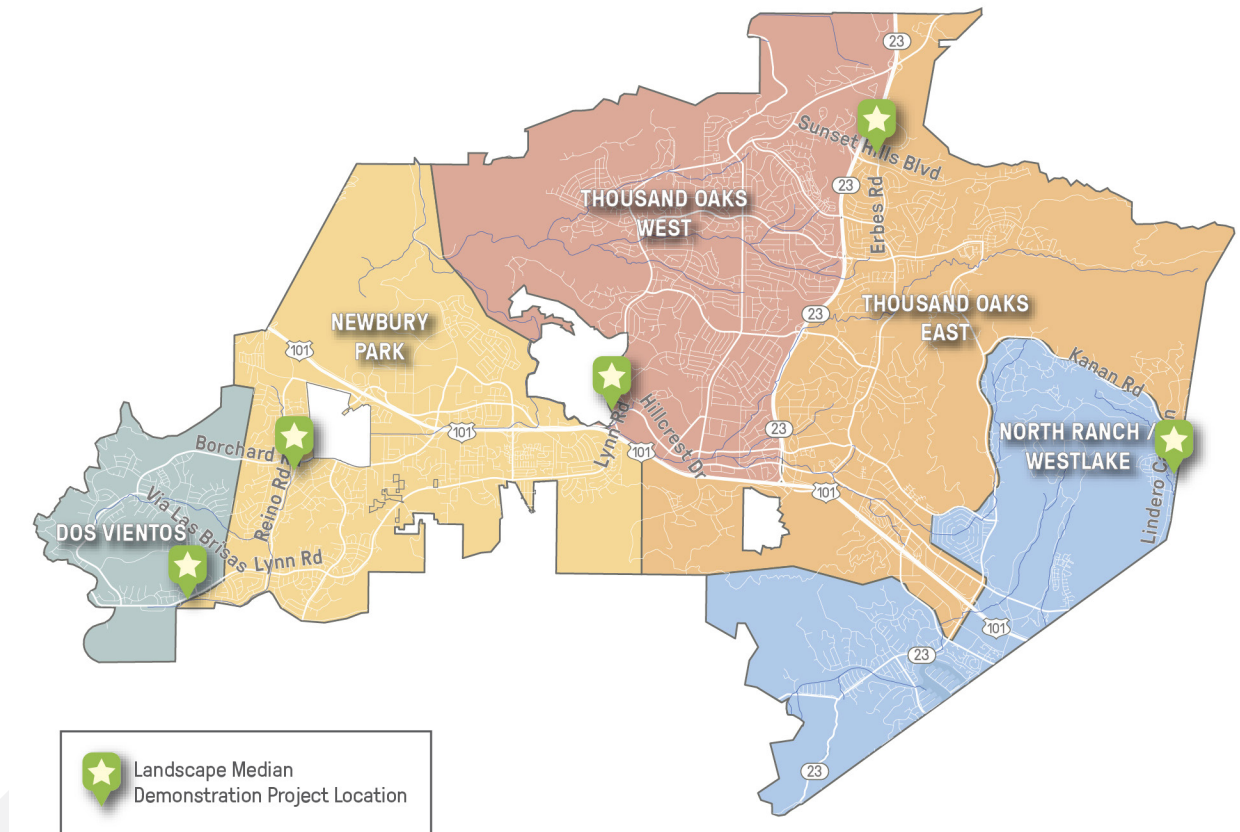


Figure 4.1 Demonstration project locations

is generally straight, and has a slope of 2-5%, from the Via Goleta end (high) toward Via Las Brisas (low),

The median planting area is flat to slightly mounded, in general. Stormwater can infiltrate the planting areas, depending on soil characteristics and compaction, with excess draining to the street. Irrigation in the median has been capped in the turf areas, except in the vicinity of the trees; shrub areas have drip irrigation. There are not any street lights within the median.

Existing understory plantings include a variety of low flowering shrubs, flowering strap-leaf plants, medium shrubs, and turf. Species include: society garlic, day lilies, lantana, verbena, fortnight lilies, gazania, and lavender. Turf areas are separated by a curvilinear concrete header. The ends and sides of the median feature decorative concrete paving, with a stone paver pattern and light tan color.

The median planting area contains three eucalyptus trees, each a different species. Live oaks are planted





Figure 4.2 Dos Vientos demonstration project
Above: Existing conditions
Right: Concept design

in the parkway on the south side of the road, and the north side has a variety of trees, including eucalyptus and live oak, planted in the parkway and sloped easement.

Design Concept

The Dos Vientos region planting concept is “California Native Garden.” The plantings should evoke a garden composed of predominately native plants that provide visual interest and seasonal variety.



Transition median canopy trees to native and/or fire resistant broadleaf evergreen or deciduous species, per the Dos Vientos Regional Character Design Guidelines in the *Forestry Master Plan*, and the *Dos Vientos Specific Plan*, as applicable. Emphasize the surroundings with California native trees and plants, and maintain the open views to the surrounding hills. Remove all existing groundcover plantings and replace according to the design guidelines. Follow appropriate turf grass removal procedures to prevent regrowth of grass. Remove the concrete headers

that currently delineate turf areas, or if conditions are appropriate, retrofit these areas as stormwater bioswales or retention basins. Protect-in-place or replace as-needed the decorative paving at the median ends.

Refer to the *Forestry Master Plan* for design guidelines and recommended plant and tree species.

4.b Newbury Park

Existing Site Conditions

The Newbury Park demonstration project site is the median at South Reino Road, between Borchard Road and Teardrop Court (Figure 4.3). The median planting area is approximately 15 feet wide and 505 feet long, comprising an estimated area of 5,454 square feet. It is the smallest of the five demonstration project sites. The right-of-way passes between residential properties to the west and east, with commercial and community uses immediately to the north of the Borchard Road intersection. Segments beyond the demonstration project site to the south are adjacent to the South Branch Arroyo Conejo channel.

At this location, the speed limit is 45 miles per hour, and there are two vehicle traffic lanes in each direction. There are not dedicated bike lanes, but it is a designated bike route and there are sidewalks on both sides of the street. This segment has a gradual arc curve and a slope between 2-5% from the Teardrop Court end (high) to Borchard Road (low).

The median planting area is generally flat to mounded. Stormwater can infiltrate the planting areas,

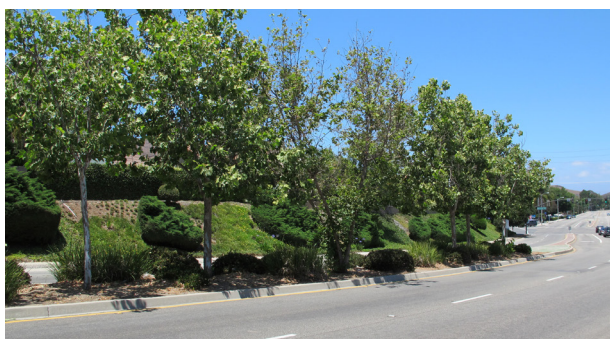
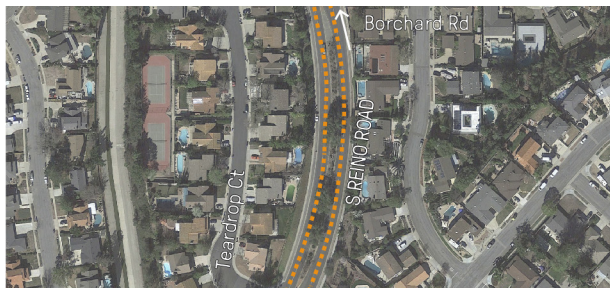


Figure 4.3 Newbury Park demonstration project
Above: Existing conditions
Right: Design concept



depending on soil characteristics and compaction, with excess draining to the street. The median has aging drip irrigation, which is in need of replacement. There are not any street lights within the median.

The median has a variety of tree species, including London plane tree, live oak, and Chinese flame tree. Existing understory planting consists of medium shrubs and flowering strap-leaf plants. Species include Indian hawthorn and fortnight lily. Each end of the median has decorative concrete paving with a

brick pattern and salmon pink color; the north end of the planting area also contains a section of standard concrete paving with faded paint.

There are not any trees or planting in the parkways, as there is currently no irrigation. Parkway strips contain grey crushed stone as a groundcover. The sloped easement on the west side of the road has a variety of plantings, dominated by gazania and juniper.

Design Concept

The Newbury Park region planting concept is “Colorful Garden.” California-friendly plantings should feature a complementary variety of colors, forms, and textures that offer visual interest.

The current median tree species are appropriate and should remain as long as they are in a healthy and safe condition. The painted concrete area should be removed, to extend the planting area of the median without impeding safe sight distances. The expanded planting area should support new flowering trees, to match the existing flowering trees at the opposite end, as well as colorful small succulents, a flowering accent tree, accent boulders, and low flowering shrubs. If conditions are appropriate, the decorative paving can extend in strips along the side of the planting area. Throughout the rest of the median, remove all understory plants and replace with flowering shrubs and ornamental grasses, which are compatible as understory for the existing trees, per the design guidelines.

Refer to the *Forestry Master Plan* for design guidelines and recommended plant and tree species.

4.c Thousand Oaks West

Existing Site Conditions

The Thousand Oaks West demonstration project site is the Lynn Road median between Hillcrest Drive and Calle Laredo (Figure 4.4). The median planting area is approximately 15 feet wide and 1,058 feet long, comprising an estimated area of 15,216 square feet. The right-of-way is located between residential





Figure 4.4 Thousand Oaks West demonstration project
Above: Existing conditions
Right: Design concept

properties to the west and east, and is north of the gateway intersections at Lynn and Hillcrest and the Ventura Freeway ramps.

At this location, the speed limit is 45 miles per hour, and there are two vehicle traffic lanes and one bike lane in each direction. The east side of the street has a striped buffer between the vehicular and bike lanes, and there are sidewalks on both sides. This segment of Lynn Road is a gentle “S” curve, and slopes between 2-5% from the Calle Laredo end (high) to



Hillcrest Drive (low).

The median planting area is generally flat to slightly mounded. Stormwater can infiltrate the planting areas, depending on soil characteristics and compaction, with excess draining to the street. The median contains drip irrigation and no street lights.

Median trees are mostly mature eucalyptus, but there are also younger trees, including pear and liquidambar. Existing understory planting contains a

mix of low to medium shrubs, with one large shrub toward the south end and mostly low shrubs at the north end. Species are primarily juniper and Indian hawthorn. The south end of the median features decorative concrete paving, with a brick pattern and light red color; the north end of the median has standard painted concrete, instead.

The right-of-way on the west side is narrow, only able to accommodate the sidewalk without any planting. The east right-of-way is also narrow, but has a sloped easement between the sidewalk and adjacent properties. The slope is planted with a variety of groundcovers, medium to large shrubs, and trees (deciduous and evergreen conifers).

Design Concept

The Thousand Oaks West planting concept is “Adaptive Arroyo.” The plantings should reflect a blend of California native and California-friendly species, planted in naturalistic groupings among boulders and riverstones.

Where site conditions are appropriate, integrate stormwater treatment (biofiltration and/or infiltration) with the median plantings. While grading should not be modified under existing trees, the benefits of improving water quality may justify the removal of immature or inappropriate trees in order to implement swales and/or detention basins in the median.

Where appropriate, maintain existing trees and continue the planting design of broadleaf evergreen and deciduous canopy trees. Remove all existing groundcovers and shrubs. Provide accents with smaller flowering trees and large, boldly flowering

shrubs. Integrate flowering strap-leaf plants with boulders and riverstones in a naturalistic arroyo arrangement at the ends of the median. Provide ornamental grasses and low shrubs throughout the median. The painted concrete at the north median end should be removed and replaced with either planting or decorative paving per site conditions. Protect-in-place or replace the decorative paving at the south end, per site conditions.

Refer to the *Forestry Master Plan* for design guidelines and recommended plant and tree species.

4.d Thousand Oaks East

Existing Site Conditions

The Thousand Oaks East demonstration project site is the median in Sunset Hills Boulevard, between California State Route 23 and Erbes Road (Figure 4.5). The median planting area is approximately 15 feet wide and 667 feet long, comprising an estimated area of 9,266 square feet. The right-of-way includes vegetated slopes on both sides, adjacent to residential properties at the top of the slopes.

At this location, the speed limit is 50 miles per hour, and there are two vehicle traffic lanes and one bike lane in each direction. There are sidewalks on both sides, however the north side sidewalk ends at the Moorpark Freeway on-ramp. This segment of Sunset Hills Boulevard has a gradual curve at the west end, and slopes between 5-8% from the Erbes Road end (high) to Highway 23 (low).

The median planting area is slightly mounded in



Figure 4.5 Thousand Oaks East demonstration project
Above: Existing conditions
Right: Design concept

general. Stormwater can infiltrate the planting areas, depending on soil characteristics and compaction, with excess draining to the street. The median has drip irrigation and a street light at the Erbes Road end.

The median contains palm trees and coast live oaks; some appear to be in declining health. Mulched areas are interspersed with medium, hedged Indian hawthorne shrubs, and flowering plants such as society garlic and fortnight lily. There is a street light post and decorative brick patterned concrete paving at



the east end of the median. At the west end, planting extends to the curb.

Planted slopes meet the edge of the sidewalk, and there are no parkways on both sides of the street. The slopes contain a variety of trees and shrubs, including pines, palms, and olives.

Design Concept

The Thousand Oaks East planting concept is “Flowering Highlights.” The plantings should be



composed of neutral shrubs and grasses accented by shrubs and small trees that have boldly colored blooms. Introducing bold and bright flowering trees and shrubs will provide colorful contrast within the “canyon” setting of this site.

As palm trees need to be removed, replace them with flowering canopy trees. New live oaks should replace existing oak trees that need to be removed, unless site conditions that cannot be corrected are leading to the poor health of this species at this location. Remove all understory groundcovers and shrubs. Plant brightly flowering small accent trees at each end of the median, and provide large boldly flowering shrubs as accents throughout the median. Plant low shrubs and ornamental grasses, which are compatible with the canopy trees, as background planting. Provide a boulder at each median end, and protect-in-place or replace the existing decorative paving.

Refer to the *Forestry Master Plan* for design guidelines and recommended plant and tree species.

4.e North Ranch / Westlake

Existing Site Conditions

The North Ranch / Westlake demonstration project site is the Lindero Canyon Road median between Bowfield and Rockfield (Figure 4.6). The median planting area is approximately 15 feet wide and 1,452 feet long, comprising an estimated area of 18,564 square feet. It is the largest of the five demonstration project sites. The right-of-way is adjacent to residential properties to the east. To the west, a vegetated buffer separates the roadway from residential properties.



Figure 4.6 North Ranch / Westlake demonstration project

Above: Existing conditions

Right: Design concept



There are views to open space hillsides to the north and south.

At this location, the speed limit is 50 miles per hour, and there are three vehicle traffic lanes and one bike lane in each direction. The east side of the street has a sidewalk adjacent to the curb; the west side has a meandering pathway that is separated from the street by a planted buffer. The road is straight for this segment, and slopes 1-2% from the Bowfield end (high) to Rockfield (low).

The median planting area is slightly mounded in general. Stormwater can infiltrate the planting areas, depending on soil characteristics and compaction, with excess draining to the street. Irrigation in the median has been capped, except in the vicinity of trees; there are not any street lights in the median.

The median is planted with turf grass and at least six different tree species along the segment. The tree ages are mixed; alders and some smaller, younger trees are showing signs of stress from the drought.

Plantings along both sides of the street contain a mix of densely planted shrubs and groundcovers, and a variety of tree species including oaks and pines.

Design Concept

The North Ranch / Westlake region planting concept is “California Meadow.” The plantings should evoke a native grassland accented by California native flowering shrubs and perennials.

Over time, as trees require replacement, the tree species selection should be simplified with a focus on trees that are native to and complementary with the oak woodland and chaparral plant communities. Turf should be removed and replaced with native or California friendly bunchgrasses. Follow appropriate turf grass removal procedures to prevent regrowth of turf grass. Groupings of flowering shrubs and perennials, as well as ornamental grasses, should be placed to provide accents in wide openings between trees. If conditions allow, regrade the median to provide stormwater detention at the downslope end. Protect-in-place or replace the existing decorative paving.

Refer to the *Forestry Master Plan* for design guidelines and recommended plant and tree species.

4.f Cost Estimates and Funding

This section provides conceptual cost estimates for each of the five demonstration projects and identifies some potential funding sources for their implementation.

Demonstration Project Cost Estimates

Cost estimates have been prepared for the five demonstration project concepts, as described and illustrated in the Forestry Master Plan and this document. The concept design statements of probable cost include total and per square foot costs for: site preparation and demolition, trees (protection of existing and/or planting new trees, as applicable per median design), shrub and groundcover planting (and accent boulders and non-vegetative groundcovers, as applicable per median design), irrigation, and repairs to existing hardscape. Stormwater treatment interventions are provided as an alternate scope cost, not included in the total estimated construction cost.

Total estimated construction costs for each of the five demonstration projects concepts are included below. Refer to the appendix for the full “Concept Design Statement of Probable Cost” report, which includes more detailed cost studies, and description of the approach and methodology, scope assumptions, and risk considerations.

Sources of Funding

There are a number of funding sources available to support community or urban forestry efforts, however these will vary from year to year. Grant programs often require matching funds to be committed by the City, therefore local public financing sources should be

Demonstration Project	Conceptual Cost Estimate	Conceptual Cost Estimate
	Total	\$ per sq. ft.
Dos Vientos	\$196,846	\$31.90 / sf
Newbury Park	\$181,615	\$33.30 / sf
Th. Oaks West	\$469,143	\$30.83 / sf
Th. Oaks East	\$273,940	\$29.56 / sf
N. Ranch/Westlk	\$493,622	\$26.59 / sf
All Projects	\$1,615,166	
Average	\$323,033	\$30.44 / sf

identified first, and then these funds can be leveraged through grant applications to make up the shortfall.

The landscape demonstration projects may be eligible for the federal, state, and private foundation grant programs described below.

Arbor Day Foundation: Tree City USA

The Arbor Day Foundation has supported the TD Green Streets Grant Program to Tree City USA communities that are located in TD Bank’s service area. Eligible projects must propose new trees to be planted in low- to moderate-income neighborhoods. While California is not included as an eligible service area, it is worthwhile to monitor the Arbor Day Foundation and Tree City USA for grant programs in the future that may be applicable for Thousand Oaks.¹

¹ National Arbor Day Foundation, “Strengthen Your Tree City USA Community”, <https://www.arborday.org/programs/treecityUSA/index-strengthen.cfm> accessed Jan. 22, 2017



CAL FIRE Urban and Community Forestry California Climate Initiative Grants

The CAL FIRE Urban Forest Expansion and Improvement Grant program provided grants in the amount of \$150,000-\$1 million for “urban tree planting and planting of urban vegetation to reduce greenhouse gas emissions, tree and plant establishment care, and planting site preparation. In addition to tree planting, a project may also involve lightly engineered planting sites (e.g. bioswales, etc)...” Applications for the 2016-2017 cycle were due on December 30, 2016. City staff should monitor this program for information on future cycles. CAL FIRE also provided a grant program in the 2016-17 cycle, Urban Forest Management Activities, that supports establishment or updating of a tree inventory.²

Calif. EPA, State Water Resources Control Board: Prop 1 Storm Water Grant Program

The Prop 1 Storm Water Grant Program offered \$200 million total in grant funding for implementation and planning projects. Eligible implementation projects are “multi-benefit storm water management projects which may include, but shall not be limited to, green infrastructure, rainwater and storm water capture projects and storm water treatment facilities.” The application cycle for Round 1 has closed, but there is a tentative Round 2 Implementation cycle for 2018. Integrating stormwater best management practices in the median projects could make them eligible for this grant program.³

2 CAL FIRE, “Urban and Community Forestry”, http://www.fire.ca.gov/resource_mgt/resource_mgt_urbanforestry_grants accessed January 22, 2017

3 State Water Resources Control Board, “Storm Water

California Natural Resources Agency: Environmental Enhancement and Mitigation (EEM) Grant Program

The Environmental Enhancement and Mitigation (EEM) Grant Program “encourages projects that produce multiple benefits which reduce greenhouse gas emissions, increase water use efficiency, reduce risks from climate change impacts, and demonstrate collaboration with local, state, and community entities.” The program includes awards for Urban Forestry Projects that are designed to offset carbon dioxide emissions through water-efficient plantings. Eligible projects must mitigate the environmental impacts of the modification or new construction of a transportation facility, and must include a water-efficient planting palette. The 2015-16 grant cycle is currently closed, and information on the next cycle has yet to be released.⁴

California Natural Resources Agency: Urban Greening Grant Program

The Urban Greening Grant Program “will fund projects that transform the built environment into places that are more sustainable, enjoyable, and effective in creating healthy and vibrant communities...” Various project types will be supported, including those that use “natural solutions to improving air and water quality,” green streets, greening of public lands,

Grant Program (SWGPs)”, http://www.waterboards.ca.gov/water_issues/programs/grants_loans/swgp/ accessed January 22, 2017

4 California Natural Resources Agency, “Environmental Enhancement and Mitigation (EEM) Grant Program”, <http://resources.ca.gov/grants/environmental-enhancement-and-mitigation-eem/> accessed January 22, 2017.

and urban heat island mitigation. Projects that are proposed by and benefit disadvantaged communities are prioritized by the program. All eligible projects must result in greenhouse gas reductions through at least one of the program’s approved activities, which include “sequester and store carbon by planting trees” Information provided here is based on the draft program guidelines; final guidelines are expected to be released on March 1, 2017.⁵

California ReLeaf

California ReLeaf grant programs have the general purpose of meeting “the critical need of creating and sustaining healthy communities in California by providing funding for an array of urban forestry efforts that range from education and outreach to tree-planting projects.” Applications for the current round of supported grant programs ended in December 2016. Both grant programs, “2016 Social Equity Tree Planting Grant Program” and “2016 Planting with Purpose Grant Program” were funded by CAL FIRE and focused on projects that combat climate change in or benefiting disadvantaged communities. The programs used CalEnviroScreen to define “disadvantaged communities”; according to this program, areas of the Newbury Park region of Thousand Oaks may be eligible. The City should follow California ReLeaf for future public grant opportunities.⁶

5 California Natural Resources Agency, “Urban Greening Grant Program”, <http://resources.ca.gov/grants/urban-greening/> accessed January 22, 2017

6 California ReLeaf, “ReLeaf Grants”, <http://californiareleaf.org/programs/grants/> accessed Jan. 22, 2017



City of Thousand Oaks
Citywide Landscape and Forestry Master Plan

Concept Design Statement of Probable Cost
January 20, 2017

Prepared for SWA Group

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City of Thousand Oaks
Citywide Landscape and Forestry Master Plan
Concept Design Statement of Probable Cost

01/20/17

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Prepared by CUMMING

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EXECUTIVE SUMMARY

1.1 Introduction

This estimate has been prepared, pursuant to an agreement between SWA and Cumming, for the purpose of establishing a probable cost of construction at the concept design stage.

The project scope encompasses site improvement to existing median through-out the City for Thousand Oaks. Median improvements include removal of existing trees and planting and new trees, shrubs, planting, irrigation, and repair to adjacent hardscape. Alternate also include for site drainage improvements

1.2 Master Plan Cost Breakdown

The total estimated construction cost within this report is summarized below:

Description	Total
A. Overall Construction Costs by Phase	
1. Demonstration Projects	
Dos Veintos	
a. Lynn Road Median - Between Via Las Brisas and Via Goleta	6,171 SF \$196,846
Newbury Park	
b. South Reino Road Median - Between Borchard Road and Teardrop Court	5,454 SF \$181,615
Thousand Oaks West	
c. Lynn Road Median - Between Calle Loreda and Hillcrest Drive	15,216 SF \$469,143
Thousand Oaks East	
d. Sunset Hills Boulevard Median - between Highway 23 and Erbes Road	9,266 SF \$273,940
North Ranch/Westlake	
e. Lindero Canyon Road Median - Between Bowfield and Rockfield	18,564 SF \$493,622
TOTAL - Construction Cost	\$1,615,165
B. Indirect Costs	
B1 - General Conditions 5.00%	include in above
B1 - General Requirements 4.00%	include in above
B3 - Bonds & Insurance 2.00%	include in above
B4 - GC Fees 3.00%	include in above
B5 - Design Contingency 12.00%	include in above
B6 - Escalation 5.00%	include in above

1.4 Key Assumptions & Exclusions

This document should be read in association with Appendices 1 - 3 which outlines assumptions, project understanding, approach, and cost management methodology. Key assumptions built into the above cost breakdown include:

Key Assumptions

- Lump Sum Bid Strategy
- Street traffic lane closures to be minimized

Key Exclusions

- Site Lighting
- Signage Improvements

SUMMARY - DOS VIENTOS

LYNN ROAD MEDIAN (Via Las Brisas and Via Goleta)

Element	Area	Total	\$/sf
Lynn Road Median (Via Las Brisas and Via Goleta)			
1 Site Preparation & Demolition		\$9,505	\$1.54
2 Trees		\$9,000	\$1.46
3 Planting - shrubs and ground cover		\$74,546	\$12.08
4 Irrigation		\$41,792	\$6.77
5 Repairs to existing hardscape		\$11,300	\$1.83
Subtotal		\$146,143	\$23.68
General Conditions	5.00%	\$7,307	\$1.18
Subtotal		\$153,450	\$24.87
General Requirements	4.00%	\$6,138	\$0.99
Subtotal		\$159,588	\$25.86
Bonds & Insurance	2.00%	\$2,923	\$0.47
Subtotal		\$162,511	\$26.33
Contractor's Fee	3.00%	\$4,875	\$0.79
Subtotal		\$167,386	\$27.12
Design Contingency	12.00%	\$20,086	\$3.25
Subtotal		\$187,472	\$30.38
Escalation ALLOWANCE	5.0%	\$9,374	\$1.52
TOTAL ESTIMATED CONSTRUCTION COST		\$196,846	\$31.90
Strom draainge/detention (Alternaet)		\$9,991	

Total Area: 6,171 SF

DETAIL ELEMENTS - DOS VIENTOS				
LYNN ROAD MEDIAN (Via Las Brisas and Via Goleta)				
Element	Quantity	Unit	Unit Cost	Total
1. Site Preparation & Demolition	6,171 SF			
Selective demolition and removals				
Clear/remove existing landscaping	6,171 SF		\$0.45	\$2,777
Remove existing trees	2 EA		\$450.00	\$900
Earthwork				
Grading - site prep	6,171 SF		\$0.75	\$4,628
Site protective construction				
Temporary storm water management during construction	1 LS		\$1,200.00	\$1,200
Total - Site Preparation and Demolition				\$9,505
2 Trees				
Includes grading, site prep, stepped paving, railings, landscaping, site accessories, utilities, lighting and site structures - excludes theater specialties				
Flowering small accent tree - 36" box	2 EA		\$1,250.00	\$2,500
Deciduous Canopy Trees - 60" box	4 EA		\$1,550.00	\$6,200
Protect exiting trees	1 EA		\$300.00	\$300
Total - Trees				\$9,000
3. Planting - shrubs and ground cover				
Landscape Planting and Maintenance				
Topsoil, fertilizer and fine grading	6,171 SF		\$0.85	\$5,245
Flowering shrubs	1,851 SF		\$18.00	\$33,323
Drought tolerant grass, planting	1,111 SF		\$8.00	\$8,886
Succulents, planting	1,358 SF		\$12.00	\$16,291
River stones/pavers (misc ground cover)	1,851 SF		\$5.00	\$9,257
Landscape maintenance (90 day)	6,171 SF		\$0.25	\$1,543
Total - Planting - shrubs and ground cover				\$74,546

DETAIL ELEMENTS - DOS VIENTOS				
LYNN ROAD MEDIAN (Via Las Brisas and Via Goleta)				
Element	Quantity	Unit	Unit Cost	Total
4. Irrigation, drainage, infrastructure				
Irrigation				
Water supply infrastructure (allowance)	1 LS		\$6,000	\$6,000
Irrigation system, including bubbler heads at each shrub and tree	6,171 SF		\$5.80	\$35,792
Total - Irrigation, Drainage, Infrastructure				\$41,792
4. Repairs to Existing Hardscape				
Repairs to existing				
Repair adjacent paving as needed	1,000 SF		\$8.00	\$8,000
Repair curbs as needed	600 LF		\$5.50	\$3,300
Total - Repairs to existing hardscape				\$11,300
5. Storm Water Detention Specialties (Alternate Scope)				
Site Drainage				
Drainage and water detention specialties	6,171 SF		\$1.20	\$7,405
Subtotal				\$7,405
General Conditions	5.00%		\$7,405	\$370
General Requirements	4.00%		\$7,775	\$311
Bonds & Insurance	2.00%		\$8,086	\$162
Contractor's Fee	3.00%		\$8,248	\$247
Subtotal				\$8,496
Design Contingency	12.00%			\$1,019
Subtotal				\$9,515
Escalation ALLOWANCE	5.0%			\$476
Total - Storm Water Detention Specialties				\$9,991



DETAIL ELEMENTS - DOS VIENTOS				
LYNN ROAD MEDIAN (Via Las Brisas and Via Goleta)				
Element	Quantity	Unit	Unit Cost	Total

SUMMARY - NEWBURY PARK			
SOUTH REINO ROAD (Borchard Road & Teardrop Court)			
Element	Area	Total	\$/sf
South Reino Road (Borchard Road and Teardrop Court)			
1 Site Preparation & Demolition		\$9,545	\$1.75
2 Trees		\$6,800	\$1.25
3 Planting - shrubs and ground cover		\$69,557	\$12.75
4 Irrigation		\$37,633	\$6.90
5 Repairs to existing hardscape		\$11,300	\$2.07
Subtotal		\$134,835	\$24.72
General Conditions	5.00%	\$6,742	\$1.24
Subtotal		\$141,577	\$25.96
General Requirements	4.00%	\$5,663	\$1.04
Subtotal		\$147,240	\$27.00
Bonds & Insurance	2.00%	\$2,697	\$0.49
Subtotal		\$149,936	\$27.49
Contractor's Fee	3.00%	\$4,498	\$0.82
Subtotal		\$154,434	\$28.32
Design Contingency	12.00%	\$18,532	\$3.40
Subtotal		\$172,966	\$31.71
Escalation ALLOWANCE	5.0%	\$8,648	\$1.59
TOTAL ESTIMATED CONSTRUCTION COST		\$181,615	\$33.30
Storm draaing/detention (Alternaet)		\$8,830	

Total Area: 5,454 SF

DETAIL ELEMENTS - NEWBURY PARK

SOUTH REINO ROAD (Borchard Road & Teardrop Court)

Element	Quantity	Unit	Unit Cost	Total
1. Site Preparation & Demolition	5,454 SF			
Selective demolition and removals				
Clear/remove existing landscaping	5,454 SF		\$0.45	\$2,454
Remove existing trees	4 EA		\$450.00	\$1,800
Earthwork				
Grading - site prep	5,454 SF		\$0.75	\$4,091
Site protective construction				
Temporary storm water management during construction	1 LS		\$1,200.00	\$1,200
Total - Site Preparation and Demolition				\$9,545

2 Trees

Includes grading, site prep, stepped paving, railings, landscaping, site accessories, utilities, lighting and site structures - excludes theater specialties

Flowering small accent tree - 24" box	1 EA		\$1,250.00	\$1,250
Flowering Deciduous Canopy Trees - 60" box	3 EA		\$1,550.00	\$4,650
Protect existing trees	3 EA		\$300.00	\$900
Total - Trees				\$6,800

3. Planting - shrubs and ground cover

Landscape Planting and Maintenance				
Topsoil, fertilizer and fine grading	5,454 SF		\$0.85	\$4,636
Flowering shrubs	1,636 SF		\$18.00	\$29,452
Ornamental grass, planting	1,364 SF		\$8.00	\$10,908
Succulents and low shrubs, planting	1,418 SF		\$12.00	\$17,016
River stones/pavers (misc ground cover)	1,036 SF		\$5.00	\$5,181
Accent boulders	1 LS		\$1,000.00	\$1,000
Landscape maintenance (90 day)	5,454 SF		\$0.25	\$1,364
Total - Planting - shrubs and ground cover	5,454 SF		\$12.75	\$69,557

DETAIL ELEMENTS - NEWBURY PARK

SOUTH REINO ROAD (Borchard Road & Teardrop Court)

Element	Quantity	Unit	Unit Cost	Total
4. Irrigation, drainage, infrastructure				
Irrigation				
Water supply infrastructure (allowance)	1 LS		\$6,000	\$6,000
Irrigation system, including bubbler heads at each shrub and tree	5,454 SF		\$5.80	\$31,633
Total - Irrigation, Drainage, Infrastructure				\$37,633

4. Repairs to Existing Hardscape

Repairs to existing				
Repair adjacent paving as needed	1,000 SF		\$8.00	\$8,000
Repair curbs as needed	600 LF		\$5.50	\$3,300
Total - Repairs to existing hardscape				\$11,300

5. Storm Water Detention Specialties (Alternate Scope)

Site Drainage				
Drainage and water detention specialties	5,454 SF		\$1.20	\$6,545
Subtotal				\$6,545
General Conditions	5.00%		\$6,545	\$327
General Requirements	4.00%		\$6,872	\$275
Bonds & Insurance	2.00%		\$7,147	\$143
Contractor's Fee	3.00%		\$7,290	\$219
Subtotal				\$7,509
Design Contingency	12.00%			\$901
Subtotal				\$8,410
Escalation ALLOWANCE	5.0%			\$420
Total - Storm Water Detention Specialties				\$8,830



DETAIL ELEMENTS - NEWBURY PARK				
SOUTH REINO ROAD (Borchard Road & Teardrop Court)				
Element	Quantity	Unit	Unit Cost	Total

SUMMARY - THOUSAND OAKS WEST			
LYNN ROAD (Loredo and Hillcrest Drive)			
Element	Area	Total	\$/sf
Lynn Road Median (Via Las Brisas and Via Goleta)			
1 Site Preparation & Demolition		\$22,309	\$1.47
2 Trees		\$18,300	\$1.20
3 Planting - shrubs and ground cover		\$183,940	\$12.09
4 Irrigation		\$94,253	\$6.19
5 Repairs to existing hardscape		\$29,500	\$1.94
Subtotal		\$348,302	\$22.89
General Conditions	5.00%	\$17,415	\$1.14
Subtotal		\$365,717	\$24.04
General Requirements	4.00%	\$14,629	\$0.96
Subtotal		\$380,346	\$25.00
Bonds & Insurance	2.00%	\$6,966	\$0.46
Subtotal		\$387,312	\$25.45
Contractor's Fee	3.00%	\$11,619	\$0.76
Subtotal		\$398,931	\$26.22
Design Contingency	12.00%	\$47,872	\$3.15
Subtotal		\$446,803	\$29.36
Escalation ALLOWANCE	5.0%	\$22,340	\$1.47
TOTAL ESTIMATED CONSTRUCTION COST		\$469,143	\$30.83
Storm drainage/detention (Alternate)		\$24,635	

Total Area: 15,216 SF

DETAIL ELEMENTS - THOUSAND OAKS WEST LYNN ROAD (Loredo and Hillcrest Drive)				
Element	Quantity	Unit	Unit Cost	Total
1. Site Preparation & Demolition	15,216 SF			
Selective demolition and removals				
Clear/remove existing landscaping	15,216 SF		\$0.45	\$6,847
Remove existing trees	5 EA		\$450.00	\$2,250
Earthwork				
Grading - site prep	15,216 SF		\$0.75	\$11,412
Site protective construction				
Temporary storm water management during construction	1 LS		\$1,800.00	\$1,800
Total - Site Preparation and Demolition				\$22,309
2 Trees				
Includes grading, site prep, stepped paving, railings, landscaping, site accessories, utilities, lighting and site structures - excludes theater specialties				
Flowering small accent tree - 24" box	6 EA		\$1,250.00	\$7,500
Flowering deciduous canopy trees - 60" box	6 EA		\$1,550.00	\$9,300
Protect existing trees	5 EA		\$300.00	\$1,500
Total - Trees				\$18,300
3. Planting - shrubs and ground cover				
Landscape Planting and Maintenance				
Topsoil, fertilizer and fine grading	15,216 SF		\$0.85	\$12,934
Flowering shrubs	4,565 SF		\$18.00	\$82,166
Ornamental grass. planting	3,500 SF		\$8.00	\$27,997
Flowering Strap-Leaf planting	3,956 SF		\$10.00	\$39,562
River stones/pavers (misc ground cover)	3,195 SF		\$5.00	\$15,977
Accent boulders	1 LS		\$1,500.00	\$1,500
Landscape maintenance (90 day)	15,216 SF		\$0.25	\$3,804
Total - Planting - shrubs and ground cover				\$183,940

DETAIL ELEMENTS - THOUSAND OAKS WEST LYNN ROAD (Loredo and Hillcrest Drive)				
Element	Quantity	Unit	Unit Cost	Total
4. Irrigation, drainage, infrastructure				
Irrigation				
Water supply infrastructure (allowance)	1 LS		\$6,000	\$6,000
Irrigation system, including bubbler heads at each shrub and tree	15,216 SF		\$5.80	\$88,253
Total - Irrigation, Drainage, Infrastructure				\$94,253
4. Repairs to Existing Hardscape				
Repairs to existing				
Repair adjacent paving as needed	3,000 SF		\$8.00	\$24,000
Repair curbs as needed	1,000 LF		\$5.50	\$5,500
Total - Repairs to existing hardscape				\$29,500
5. Storm Water Detention Specialties (Alternate Scope)				
Site Drainage				
Drainage and water detention specialties	15,216 SF		\$1.20	\$18,259
Subtotal				\$18,259
General Conditions	5.00%		\$18,259	\$913
General Requirements	4.00%		\$19,172	\$767
Bonds & Insurance	2.00%		\$19,939	\$399
Contractor's Fee	3.00%		\$20,338	\$610
Subtotal				\$20,948
Design Contingency	12.00%			\$2,514
Subtotal				\$23,462
Escalation ALLOWANCE	5.0%			\$1,173
Total - Storm Water Detention Specialties				\$24,635



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DETAIL ELEMENTS - THOUSAND OAKS WEST
LYNN ROAD (Loredo and Hillcrest Drive)

Element	Quantity	Unit	Unit Cost	Total
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SUMMARY - THOUSAND OAKS EAST
SUNSET HILLS BLVD (Highway 23 and Erbes Rd)

Element	Area	Total	\$/sf
Lynn Road Median (Via Las Brisas and Via Goleta)			
1 Site Preparation & Demolition		\$15,219	\$1.64
2 Trees		\$8,650	\$0.93
3 Planting - shrubs and ground cover		\$101,017	\$10.90
4 Irrigation		\$59,743	\$6.45
5 Repairs to existing hardscape		\$18,750	\$2.02
Subtotal		\$203,379	\$21.95
General Conditions	5.00%	\$10,169	\$1.10
Subtotal		\$213,548	\$23.05
General Requirements	4.00%	\$8,542	\$0.92
Subtotal		\$222,090	\$23.97
Bonds & Insurance	2.00%	\$4,068	\$0.44
Subtotal		\$226,157	\$24.41
Contractor's Fee	3.00%	\$6,785	\$0.73
Subtotal		\$232,942	\$25.14
Design Contingency	12.00%	\$27,953	\$3.02
Subtotal		\$260,895	\$28.16
Escalation ALLOWANCE	5.0%	\$13,045	\$1.41
TOTAL ESTIMATED CONSTRUCTION COST		\$273,940	\$29.56
Storm drainage/detention (Alternate)		\$15,002	

Total Area: 9,266 SF

DETAIL ELEMENTS - THOUSAND OAKS EAST SUNSET HILLS BLVD (Highway 23 and Erbes Rd)				
Element	Quantity	Unit	Unit Cost	Total
1. Site Preparation & Demolition	9,266 SF			
Selective demolition and removals				
Clear/remove existing landscaping	9,266 SF		\$0.45	\$4,170
Remove existing trees, including palm trees	6 EA		\$450.00	\$2,700
Earthwork				
Grading - site prep	9,266 SF		\$0.75	\$6,950
Site protective construction				
Temporary storm water management during construction	1 LS		\$1,400.00	\$1,400
Total - Site Preparation and Demolition				\$15,219
2 Trees				
Includes grading, site prep, stepped paving, railings, landscaping, site accessories, utilities, lighting and site structures - excludes theater specialties				
Flowering small accent tree - 24" box	1 EA		\$1,250.00	\$1,250
Flowering deciduous canopy trees - 60" box	4 EA		\$1,550.00	\$6,200
Protect existing trees	4 EA		\$300.00	\$1,200
Total - Trees				\$8,650
3. Planting - shrubs and ground cover				
Landscape Planting and Maintenance				
Topsoil, fertilizer and fine grading	9,266 SF		\$0.85	\$7,876
Flowering shrubs	1,853 SF		\$18.00	\$33,358
Ornamental grass, planting	2,594 SF		\$8.00	\$20,756
Lower shrubs, planting	2,965 SF		\$10.00	\$29,651
Mulch (misc ground cover)	1,853 SF		\$3.00	\$5,560
Accent boulders	1 LS		\$1,500.00	\$1,500
Landscape maintenance (90 day)	9,266 SF		\$0.25	\$2,317
Total - Planting - shrubs and ground cover				\$101,017

DETAIL ELEMENTS - THOUSAND OAKS EAST SUNSET HILLS BLVD (Highway 23 and Erbes Rd)				
Element	Quantity	Unit	Unit Cost	Total
4. Irrigation, drainage, infrastructure				
Irrigation				
Water supply infrastructure (allowance)	1 LS		\$6,000	\$6,000
Irrigation system, including bubbler heads at each shrub and tree	9,266 SF		\$5.80	\$53,743
Total - Irrigation, Drainage, Infrastructure				\$59,743
4. Repairs to Existing Hardscape				
Repairs to existing				
Repair adjacent paving as needed	2,000 SF		\$8.00	\$16,000
Repair curbs as needed	500 LF		\$5.50	\$2,750
Total - Repairs to existing hardscape				\$18,750
5. Storm Water Detention Specialties (Alternate Scope)				
Site Drainage				
Drainage and water detention specialties	9,266 SF		\$1.20	\$11,119
Subtotal				\$11,119
General Conditions	5.00%		\$11,119	\$556
General Requirements	4.00%		\$11,675	\$467
Bonds & Insurance	2.00%		\$12,142	\$243
Contractor's Fee	3.00%		\$12,385	\$372
Subtotal				\$12,757
Design Contingency	12.00%			\$1,531
Subtotal				\$14,287
Escalation ALLOWANCE	5.0%			\$714
Total - Storm Water Detention Specialties				\$15,002



DETAIL ELEMENTS - THOUSAND OAKS EAST				
SUNSET HILLS BLVD (Highway 23 and Erbes Rd)				
Element	Quantity	Unit	Unit Cost	Total

SUMMARY - NORTH RANCH WESTLAKE			
LINDERO CANYON ROAD (Bowfield & Rockfield)			
Element	Area	Total	\$/sf
Lynn Road Median (Via Las Brisas and Via Goleta)			
1 Site Preparation & Demolition		\$23,677	\$1.28
2 Trees		\$1,500	\$0.08
3 Planting - shrubs and ground cover		\$200,877	\$10.82
4 Irrigation		\$113,671	\$6.12
5 Repairs to existing hardscape		\$26,750	\$1.44
Subtotal		\$366,475	\$19.74
General Conditions	5.00%	\$18,324	\$0.99
Subtotal		\$384,799	\$20.73
General Requirements	4.00%	\$15,392	\$0.83
Subtotal		\$400,191	\$21.56
Bonds & Insurance	2.00%	\$7,330	\$0.39
Subtotal		\$407,521	\$21.95
Contractor's Fee	3.00%	\$12,226	\$0.66
Subtotal		\$419,746	\$22.61
Design Contingency	12.00%	\$50,370	\$2.71
Subtotal		\$470,116	\$25.32
Escalation ALLOWANCE	5.0%	\$23,506	\$1.27
TOTAL ESTIMATED CONSTRUCTION COST		\$493,622	\$26.59
Strom drainage/detention (Alternate)		\$30,055	

Total Area: 18,564 SF

**DETAIL ELEMENTS - NORTH RANCH WESTLAKE
LINDERO CANYON ROAD (Bowfield & Rockfield)**

Element	Quantity	Unit	Unit Cost	Total
1. Site Preparation & Demolition	18,564	SF		
Selective demolition and removals				
Clear/remove existing landscaping	18,564	SF	\$0.45	\$8,354
Earthwork				
Grading - site prep	18,564	SF	\$0.75	\$13,923
Site protective construction				
Temporary storm water management during construction	1	LS	\$1,400.00	\$1,400
Total - Site Preparation and Demolition				\$23,677

2 Trees

Includes grading, site prep, stepped paving, railings, landscaping, site accessories, utilities, lighting and site structures - excludes theater specialties

Protect existing trees	5	EA	\$300.00	\$1,500
Total - Trees				\$1,500

3. Planting - shrubs and ground cover

Landscape Planting and Maintenance				
Topsoil, fertilizer and fine grading	18,564	SF	\$0.85	\$15,779
Flowering shrubs	3,713	SF	\$18.00	\$66,830
Ornamental grass, planting	5,198	SF	\$8.00	\$41,583
Lower shrubs, planting	5,940	SF	\$10.00	\$59,405
Mulch (misc ground cover)	3,713	SF	\$3.00	\$11,138
Accent boulders	1	LS	\$1,500.00	\$1,500
Landscape maintenance (90 day)	18,564	SF	\$0.25	\$4,641
Total - Planting - shrubs and ground cover	18,564	SF	\$10.82	\$200,877

4. Irrigation, drainage, infrastructure

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**DETAIL ELEMENTS - NORTH RANCH WESTLAKE
LINDERO CANYON ROAD (Bowfield & Rockfield)**

Element	Quantity	Unit	Unit Cost	Total
Irrigation				
Water supply infrastructure (allowance)	1	LS	\$6,000	\$6,000
Irrigation system, including bubbler heads at each shrub and tree	18,564	SF	\$5.80	\$107,671
Total - Irrigation, Drainage, Infrastructure				\$113,671

4. Repairs to Existing Hardscape

Repairs to existing				
Adjacent decorative paving	2,000	SF	\$12.00	\$24,000
Repair curbs as needed	500	LF	\$5.50	\$2,750
Total - Repairs to existing hardscape				\$26,750

5. Storm Water Detention Specialties (Alternate Scope)

Site Drainage				
Drainage and water detention specialties	18,564	SF	\$1.20	\$22,277
Subtotal				\$22,277
General Conditions	5.00%		\$22,277	\$1,114
General Requirements	4.00%		\$23,391	\$936
Bonds & Insurance	2.00%		\$24,326	\$487
Contractor's Fee	3.00%		\$24,813	\$744
Subtotal				\$25,557
Design Contingency	12.00%			\$3,067
Subtotal				\$28,624
Escalation ALLOWANCE	5.0%			\$1,431
Total - Storm Water Detention Specialties				\$30,055

Prepared by CUMMING



APPENDIX 1 - APPROACH & METHODOLOGY

Basis of Estimate	Conceptual Design Package fir Demonstration Projects dated Dec 9, 2016 Design Renderings Site Area (SF) provide by Landscape Architect Direction and Clarifications as provided by Landscape Architect
Estimate Format	A component cost classification format has been used for the preparation of this estimate. Cost Study is organized by work categories and incldye scxpaē estima for each meduan sute
Cost Mark Ups	The following % mark ups have been included: - General Conditions (5.00% on direct costs) - General Requirements (4.00% on direct costs) - GC Fee (3.00% compound) - Bonds & Insurance (2.00% compound)
Escalation	- All subcontractor prices herein are reflective of current bid prices. Escalation has been included on the summary level to the stated mid point of construction. - Escalation (5.00% compound per year average) - Overall Escalation varies by phase based in assumed master schedule
Design Contingency	An allowance of 12.00% for undeveloped design details has been included in this estimate. As the design of each system is further developed, details which historically increase cost become apparent and must be incorporated into the estimate while decreasing the % burden.
Construction Contingency	It is prudent for all program budgets to include an allowance for change orders which occur during the construction phase. These change orders normally increase the cost of the project. It is recommended that a 8% construction contingency is carried in this respect. This cost is <u>not</u> included within the estimate.
Construction Schedule	Costs included herein have been based upon a project deleivery plan of 1-2 years. Excessive overtime or off hour work to meet accelerated schedule milestone dates are not included in costs
Method of Procurement	The estimate is based on a lump sum delivery model with a low bid general contractor.
Bid Conditions	This estimate has been based upon competitive bid situations (minimum of 3 bidders) for all items of subcontracted work.
Basis For Quantities	Wherever possible, this estimate has been based upon the actual measurement of different items of work. For the remaining items, parametric measurements were used in conjunction with other projects of a similar nature.
Basis for Unit Costs	Unit costs as contained herein are based on current bid prices in Ventura County/Los Angeles Region. Sub overheads and profit are included in each line item unit cost. Their overhead and profit covers each sub's cost for labor burden, materials, and equipment, sales taxes, field overhead, home office overhead, and profit. The general contractor's overhead is shown separately on the master summary.

APPENDIX 1 - APPROACH & METHODOLOGY

Sources for Pricing

This estimate was prepared by a team of qualified cost consultants experienced in estimating construction costs at all stages of design. These consultants have used pricing data from Cumming's database for this type of construction, updated to reflect current conditions in Los Angeles .

Key Exclusions

All soft cost are excluded including the following items

- Professional design and consulting fees.
- Testing fees.
- Owner's field inspection costs.
- Construction / project manager's fees.
- Plan check fees and building permit fees.
- Construction phase contingency.
- Financing and carry costs.
- Preconstruction services.
- Other soft costs.

Items Affecting Cost Estimate

Items which may change the estimated construction cost include, but are not limited to:

- Modifications to the scope of work included in this estimate.
- Unforeseen sub-surface conditions.
- Restrictive technical specifications or excessive contract conditions.
- Any specified item of material or product that cannot be obtained from 3 sources.
- Any other non-competitive bid situations.
- Bids delayed beyond the projected schedule.

Statement of Probable Cost

Cumming has no control over the cost of labor and materials, the general contractor's or any subcontractor's method of determining prices, or competitive bidding and market conditions. This estimate is made on the basis of the experience, qualifications, and best judgement of a professional consultant familiar with the construction industry. Cumming, however, cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from this or subsequent cost estimates.

Cumming's staff of professional cost consultants has prepared this estimate in accordance with generally accepted principles and practices. This staff is available to discuss its contents with any interested party.

Pricing reflects probable construction costs obtainable in the project locality on the target dates specified and is a determination of fair market value for the construction of this project. The estimate is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the construction work for all sub and general contractors with a range of 3 - 4 bidders for all items of work. Experience and research indicates that a fewer number of bidders may result in higher bids. Conversely, an increased number of bidders may result in more competitive bid day responses.

APPENDIX 2 - SCOPE ASSUMPTIONS

Description	Assumed Scope
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General Project Info

- Escalation based assumed construction mid-point
- Local GC laydown/compound area within proximity.
- Local trade parking available at sites
- All sub trades to be competitively bid.
- Labor pool from Ventura County or Los Angeles.

Detailed Assumptions & Allowance

- Removal of all existing landscape and selected trees for each median site as required.
- Existing tree to be protected in place
- Regrading grading of planting areas as needed
- Allowance for water Utilities for new irrigation system
- Repairs to existing paving and curbs as needed
- Temporary street traffic management will be required for construction duration.
- On site grading includes erosion control measures.
- New ornamental median paving assumed North Ranch/Westlake site
- Allowance include for number of new trees as per renderings
- planting areas assumed as per landscape renderings
- Allowance for site drainage system include below the line as alternate scope
- Allowances accent boulders as per landscape renderings included

Exclusions

- No allowances included for site furnishings.
- No Allowance included for site signage
- No Allowance included for site lighting

APPENDIX 3 - RISK CONSIDERATIONS

Section	Description
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Labor Availability	Short Term or Current construction market is heated due a large number of "Mixed Use" and "Mid-rise Housing" projects under construction. There could be some challenges in the current availability of labor. Long term there could be further shortages of construction trade labor due to potential increases in Public Works spending over the next few years.
Material Costs	There is no current evidence of material shortages. There is potential for long lead time for some materials, but should not have a large impact on project cost.
Productivity	The project is not expected to have challenges with regards to productivity due the scope of work defined for median site and no unusual access or laydown constraints. General contractor will need to street maintain traffic at all time resulting in temporary construction. barriers, signage and traffic controls.
Sub-Contractor Mark Up	This project at each site is not expected to have higher than typical markups to cover the contractor's supervision and risk in working wit the City.
Local Sales Tax	All local taxes are included in pricing and general contractor markups.
Project Access	Estimate assumes the Contractor will have full access to work areas at each phase during standard working hours with potential off hour work only for MEP connections.
Project Constraints	Security and safety will be a main concern for Contractor and College during the construction. General requirements assumes temporary barricades to separate work area from Occupied Spaces will be needed.
Bidding Market	The project is expected to attract multiple general contractors that have experience working with City of Thousand Oaks, County of Ventura and other Public Organizations. Minimal of 3 to 5 bids are expected.
Escalation	Allowances have been include for escalation for each work phase that reflects an assumed average escalation of 3% per year, but can be higher for some trades.

