
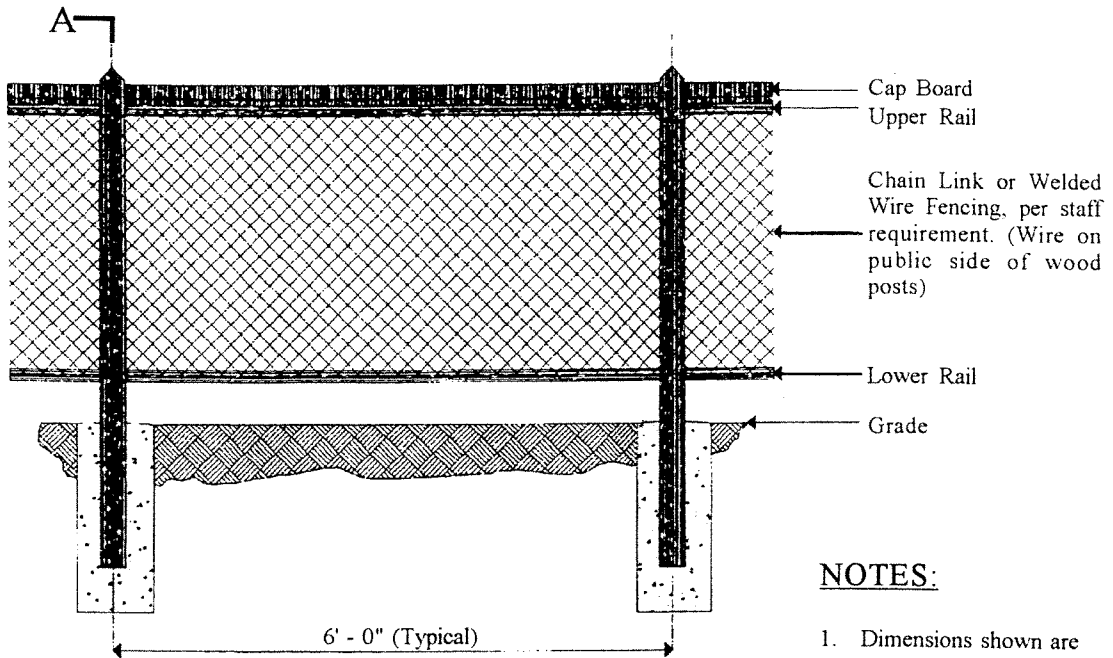


TABLE OF CONTENTS LANDSCAPING & IRRIGATION 100 SERIES

<u>Standard No.</u>	<u>Title</u>	<u>Date of Approval \ Revision</u>
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100	Mitigation - Open Space Easement Fencing Standard	May 21st 1999
101	Standard Tree Planting and Staking Detail	August 21st 1995
102	Standard Linear Root Barrier Detail	August 21st 1995
103	Electrical Irrigation System Standard	March 31st 1995
104	Electrical Irrigation System Standard	March 31st 1995

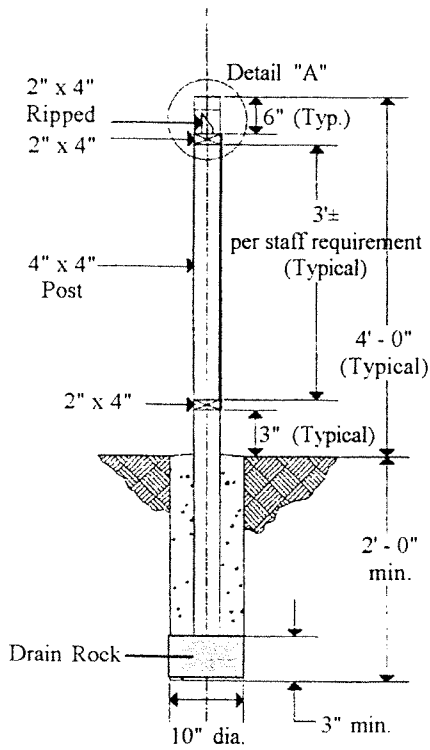
<p>CITY OF PETALUMA Department of Engineering 22 Bassett Street - Petaluma California 94952 707.778.4304 - Fax 707.778.4437</p>	<p>Standard LANDSCAPING & IRRIGATION Table of Contents</p>	<p>Drawn By: Butch Smith</p> <p>Scale: N. T. S.</p> <p>Date: May 21st 1999 (Rev.)</p> <p>File Number: Std.Det. LIS0000.100A</p>	 <p>Page: 100A</p>
<p>Approved By: <i>Thomas S. Hargis</i> Thomas S. Hargis - R.C.E. 22366</p>			



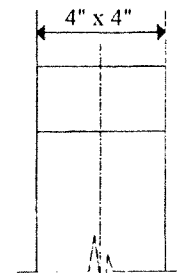
NOTES:

1. Dimensions shown are nominal dimensions.
2. All wood is rough cut clear heart redwood.

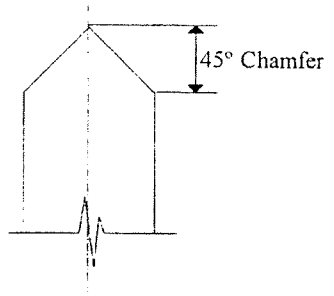
Elevation View



Section A-A



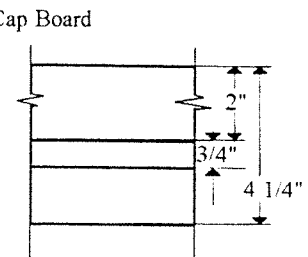
Post Detail "A"
Side



Post Detail "A"
Front



Upper Rail Detail "A"
Side



Upper Rail Detail "A"
Front

CITY OF PETALUMA
Department of Engineering

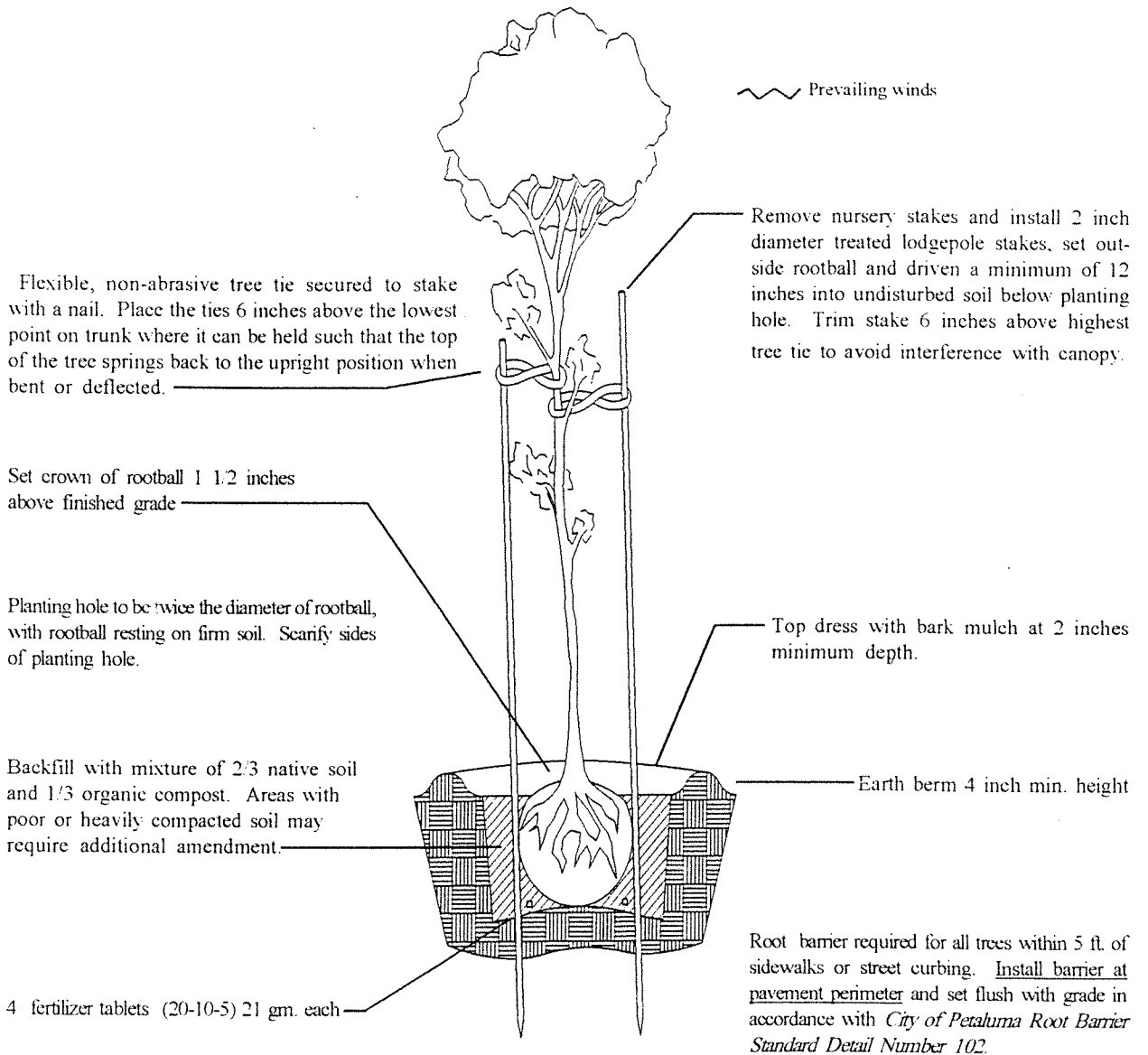
22 Bassett Street - Petaluma, California 94952
707.778.4304 - Fax 707.778.4437

Approved By:
Thomas S. Hargis
Thomas S. Hargis - R.C.E. 22366

Mitigation / OpenSpace
Easement
**FENCING
STANDARD**
Detail

Drawn by:
Butch Smith
Scale:
N. T. S.
Date:
May 21st 1999 (Rev.)
File Number:
Std. Det. LIS0000.100




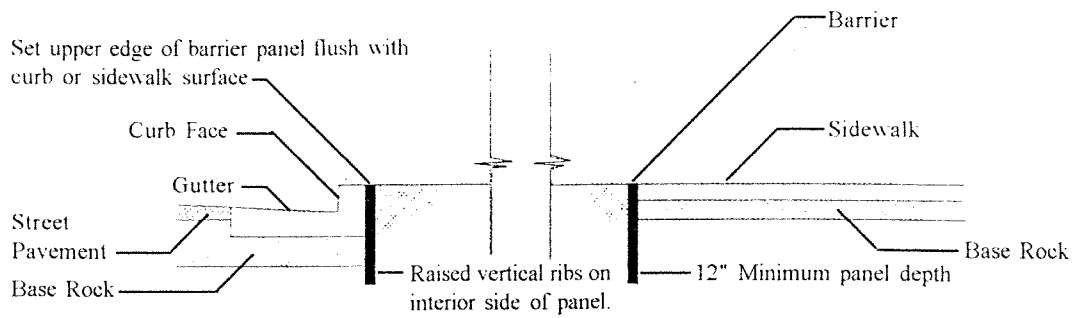


Section View

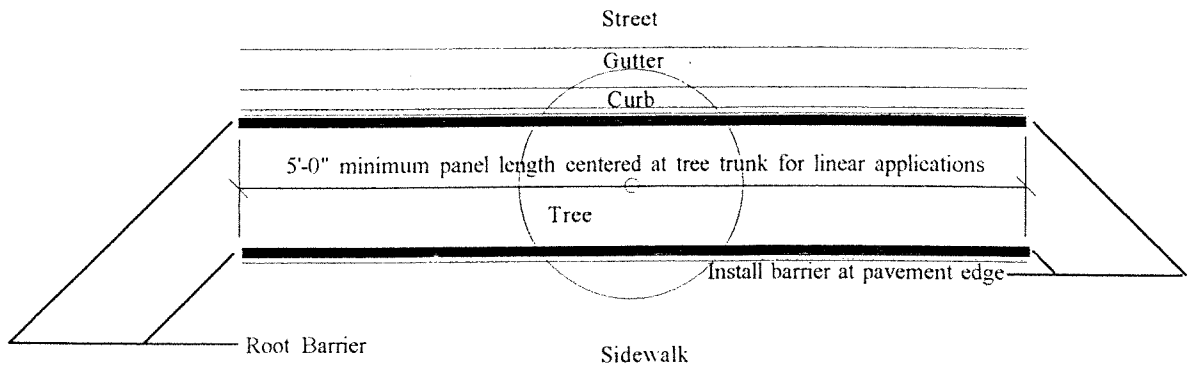
NOTES:

- 1) All trees within public right-of-way areas to be minimum 15 gal. size, and in conformance with City Street Tree List.
- 2) Excavation permit required prior to removal of pavement in right of way areas.
- 3) All trees planted and/or installation of decorative metal grates within downtown area shall, at the discretion of the Director of Engineering, and/or Director of Public Works, and/or Director of Planning.

<p style="text-align: center;">CITY OF PETALUMA Department of Engineering 22 Bassett Street - Petaluma California 94952 707 778 4304 - Fax 707 778 4437</p> <p style="text-align: center;">Approved By: <i>Thomas S. Hargis</i> Thomas S. Hargis - R.C.E. 22366</p>	<p>Standard TREE PLANTING AND STAKING Detail</p>	<p>Drawn By Butch Smith</p> <p>Scale N. T. S.</p> <p>Date August 21st 1995</p> <p>File Number Std. Det. LIS0000.101</p>	 Page 101
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Section View




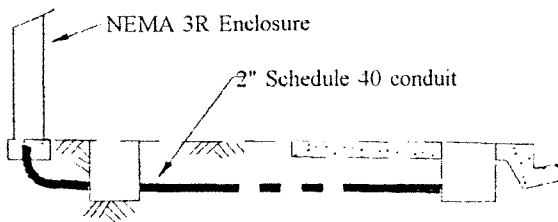
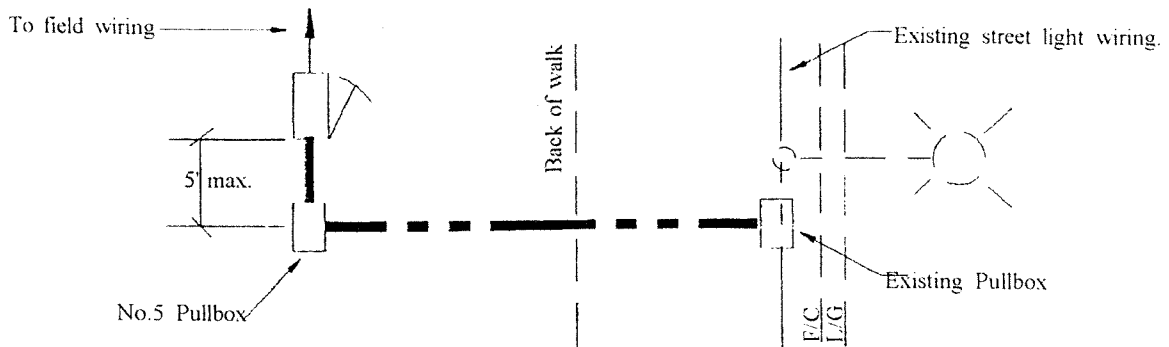
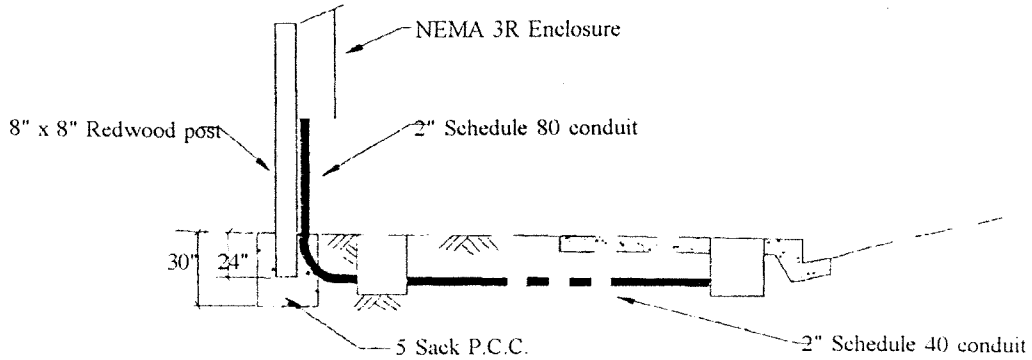
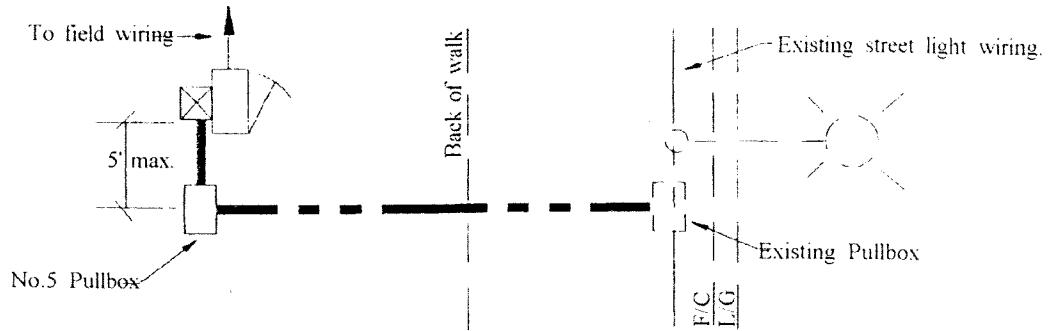
Plan View

NOTE:

1. Install barrier against perimeter of all adjacent street cubing or sidewalk paving situated within 5'-0" of tree trunk.
2. Set upper edge of barrier panel at or slightly below pavement surface grade.
3. Install barrier with ribs facing the tree. Panel may be positioned to angle slightly outward toward the bottom.

Material shall consist of polypropylene or polystyrene sheets, or other City approved sheet or sectional panel material. Sheet or sectional panel material shall be at least a thickness of .060 by 12" minimum depth with root deflective, raised vertical ribbing. Interlocking coupling connectors shall be used to connect panels, or coupling shall be solvent welded to provide sealed units, in accordance with manufacturer's specifications. Materials shall not be impregnated with chemicals intended to deter root growth.

<p>CITY OF PETALUMA Department of Engineering 22 Bassett Street - Petaluma California 94952 707 778 4304 - Fax 707 778 4437</p>	<p>Standard LINEAR ROOT BARRIER Detail</p>	<p>Drawn By: Butch Smith</p>	
<p>Approved By: <i>Thomas S. Hargis</i> Thomas S. Hargis - R.C. 22366</p>		<p>Scale: N. T. S.</p>	
		<p>File Number: Std. Det. LIS0000.102</p>	<p>Page: 102</p>



LEGEND


F.C. = Face of Curb
L.G. = Lip of Gutter

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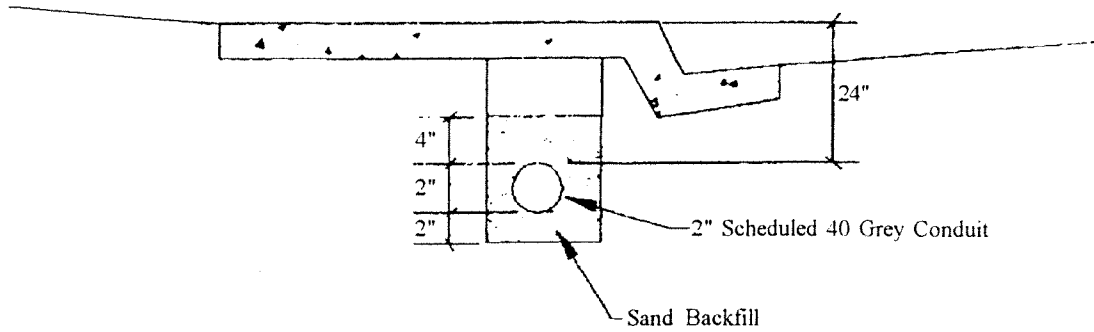
Approved By
Thomas S. Hargis
Thomas S. Hargis - R.C.D. 22366

Electrical
Irrigation
System
Standard

Drawn By
Butch Smith
Scale
N. T. S.
Date
March 31st 1995
File Number
Std. Det. LIS0000.103



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NOTES:

All City maintained irrigation systems shall comply with the City of Petaluma General Notes for Street Light installations. The city of Petaluma General Notes are in addition to CALTRANS Standard Specifications, Section 86.

The Contractor shall provide a NEMA Type 3R cabinet enclosure with a hinged cover. The cabinet shall be sized to hold the following equipment.

- One (1) 8 Station Irrigation Controller
- One (1) 20A Circuit Breaker Disconnect
- One (1) 20A Receptacle GFI

All underground conduit shall be Scheduled 40 Grey 2"

All wire shall be No.8 stranded copper with weather proof covering.



3' of slack wire shall be coiled at each termination point.

All conductors shall be tagged for permanent identification to the irrigation controller.

All splices shall be capable of satisfactory operation under continuous submersion in water.

The fuse tran with 10A fuse shall be installed in the street light handhole.

No.5 pullboxes shall be used with 12" of clean drain rock, roofing paper and 1/2" thick grout sloped to a 1" drain hole.

<p>CITY OF PETALUMA Department of Engineering 22 Bassett Street - Petaluma California 94952 707.778.4304 - Fax 707.778.4437</p>	<p>Electrical Irrigation System Standard</p>	<p>Drawn By: Butch Smith Scale: N. T. S.</p>	
<p>Approved By:  Thomas S. Hargis - R.C.E. 22366</p>		<p>Date: March 31st 1995 File Number: Std.Det. LIS0000.104</p>	

**LANDSCAPE WATER EFFICIENCY
STANDARDS**
of the
CITY OF PETALUMA

in compliance with the
**STATE OF CALIFORNIA
WATER CONSERVATION
IN LANDSCAPING ACT
AB 325**

Developed by the City of Petaluma
Department of Water Resources
and
Conservation

February 16, 2001

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APPENDICES

Appendix A: The Water Use Classification of Landscape Species (WUCOLS).....

Appendix B: Landscape Water Use Statement Form

CITY OF PETALUMA

LANDSCAPE STANDARDS

I. PURPOSE

The purpose of these standards is to promote efficient water use and reduce water waste through landscape and irrigation planning and design, installation, and long-term landscape management specific to Petaluma's climate zone.

All plants require water. Landscape irrigation water serves the purpose of maintaining a healthy, attractive and functional landscape. A design water budget will match plant needs to water supply and maintain landscape health and vigor. Applicants will develop a design water budget per each site plan submitted for review.

The purpose of developing a design water budget is to create an estimate of landscape water needs. Estimates of landscape water needs are important for at least three reasons: water efficiency; economics; and landscape quality. Water efficiency can be achieved by supplying only the amount of water sufficient to meet plant needs. Applying only that amount of water needed by plants and landscapes, and avoiding excess use, can save the customer money. Lastly, identifying and meeting plant water needs can minimize the potential for plant injury caused by water deficits or excess.

Turf grass can be included in a design water budget. Turf grass has relatively high water needs, therefore, these standards do not permit turf grass on slopes and in median strips. Tree planting in turf grass areas is not permitted (water supplied to meet turf needs is often not sufficient for newly planted trees in turf).

These Standards supercede the Model Water Efficient Landscape Ordinance, as required by California Assembly Bill 325, 1992 (The Water Conservation and Landscaping Act of 1990).

II. APPLICATION

- A. The standards apply to new industrial, commercial, and institutional landscaping, and all new multi-family common areas and contractor installed single-family front yards in new sub-divisions.
- B. Single-family residences and multi-family private areas are exempt from these standards. However, all residents are encouraged to follow these standards.
- C. Schoolyards, parks, playgrounds, sports fields, and golf courses are exempt from establishing a design water budget. Every other requirement of these standards is applicable, including estimation of irrigation water requirements. In addition, turf grass areas of these sites shall have a landscape irrigation audit performed after the installation or renovation of the irrigation system.

- D. The standards do not apply to cemeteries or registered historical sites. However, landscape managers at these sites are encouraged to follow efficient irrigation system management practices.
- E. The standards apply to any landscaping that is irrigated solely by reclaimed (treated, recycled wastewater) water. Reclaimed water may contain injurious levels of salts or specific elements. When irrigating with reclaimed water, water quality will need to be monitored and assessed. (Some upward adjustments in water estimates may be needed to reduce plant injury potential with low quality water).
- F. The standards do not apply to areas devoted to agricultural cultivation.

III. DEFINITIONS OF TERMS

Adjusted ET Factor - An adjustment of 0.75 is applied to evapotranspiration to decrease the amount of water intensive landscape features such as turfgrass.

Area - Expressed in square feet. Area can be defined as:

- i. site area - the total area of a site, including building footprints, roadways, and parking areas
- ii. hardscapes such as decks and patios, and other non-porous surfaces.
- iii. irrigated area - planted areas requiring supplemental irrigation.

Bubbler - An irrigation head that delivers water to the root zone by "flooding" the planted area, usually measured in gallons per minute. Bubblers exhibit a trickle, umbrella, or short stream pattern.

CCF - Hundred cubic feet. The City of Petaluma water customers are billed for water consumption in units of CCF.

CIMIS Weather Station - The California State Department of Water Resources operates California Irrigation Management Information System (CIMIS) weather stations. CIMIS weather station #144 has been installed at the Rooster Run Golf Course in Petaluma. CIMIS weather stations collect weather data through sensors and calculate Evapotranspiration data. ET data is available on the City of Petaluma's web site www.ci.petaluma.ca.us.

Common areas - Those areas in a residential development maintained by either the developer or a homeowner's association.

Conversion factor (0.00083) - A number that converts the maximum water allowance (design water budget) from inches (in.) per square foot (sq. ft.) per year to units of one hundred cubic feet (CCF) per square foot per year. Water is metered and sold in Petaluma in CCF units. The conversion is calculated as follows:

$$(435.6 \text{ CCF}/43,560 \text{ sq.ft.})/12 \text{ inches} = 0.00083$$

Where 435.6 CCF = 1 acre foot
43,560 sq.ft. = one acre
12 inches = one foot

Design Water Budget (dWB) - For design purposes, the upper limit of annual water use for the established landscaped area supplied through City water meters.

Effective Precipitation - The portion of total precipitation used by plants in the landscape. Precipitation is not a reliable source of water and has not been used in calculating landscape water requirements in Petaluma's landscape standards.

ET (Evapotranspiration) - The quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time, expressed in inches per day, month, or year. For purposes of these standards, the annual ET for Petaluma is 39 inches. ET can be converted to gallons or units of 100 cubic feet (ccf).

GPM – Gallons per minute

Hydrozone - A portion of the landscaped area that has plants with similar water needs and are in a similar microclimate. A hydrozone may be non-irrigated or served by one or more irrigation valves. For example, a naturalized area planted with native vegetation that will not need supplemental irrigation once established as a non-irrigated hydrozone.

Irrigation Efficiency - A measurement of the amount of water beneficially used by plants divided by the amount of water applied. Irrigation efficiency is derived from estimates of irrigation system design efficiency and management practices.

Irrigation Zone - Same as irrigation circuit. An irrigation distribution line and associated application devices controlled by one valve.

Landscape Coefficient Method – Describes a method of estimating irrigation needs of landscape plantings in California. It is intended as a guide for landscape professionals. LCM is derived from analysis of plant species, planting density, and microclimate which, when compared to ET, results in an estimate of the amount of water required to maintain a planted area.

Landscape Zone – (see Hydrozone) A portion of the landscaped area having similar microclimate and soil conditions and plants with similar water needs that are served by one or several valves with a similar type of irrigation.

Local Annual Mean Precipitation - The average amount of rain in inches per year is based on an average of annual rainfall over a 30-year period. The 30-year average for Petaluma was obtained from California Department of Water Resources and California Polytechnic San Luis Obispo. The local annual mean precipitation for Petaluma is 24.8 inches per year.

Plant Water Requirement - An estimate of the amount of water required to maintain an acceptable degree of health and vigor in the planting or group of plants irrigated by one valve.

Precipitation Rate – The depth of water applied to a given area, usually measured in inches per hour.

Rain Shut-Off Device – A device wired to the automatic controller that shuts off the irrigation system when it rains.

Sq. Ft. – Square foot.

Turf – A surface layer of earth containing mowed grass with its roots.

WUCOLS – Initiated and supported by the California Department of Water Resources, the Water Use Classification of Landscape Species (WUCOLS) is a guide to the water needs of landscape plants. The City of Petaluma falls into WUCOLS region #1 described as north central and coastal. Plants are listed by botanical name and ranked in hydrozones as high, moderate or low (very low) water requirements to the water needs of landscape plants and divides plants into water use categories (see Appendix 1).

IV. WATER EFFICIENT SPECIFICATIONS

1.0 Requirements for Preparing a Landscape Design Water Budget

1.01 Calculate Design Water Budget

The design Water Budget (dWB) is the amount of water that a project is allotted based on the size of the landscape area. A design Water Budget will be established for each site plan submitted for review:

$$\begin{aligned} \text{dWB} &= \text{ET} \times \text{Adjusted ET Factor} \times (\text{LA}) \times .00083 \\ \text{dWB} &= 39" \times 0.75 \times (\text{LA}) \times 0.00083 \end{aligned}$$

Where: dWB = Design Water Budget in CCF
 ET = Annual Reference Evapotranspiration = 39 inches
 0.75 = ET adjustment factor
 LA = Landscaped area in sq. ft.
 0.00083 = Conversion factor into CCF

Example for a one-acre site:

$$\begin{aligned} \text{dWB} &= 39" \times 0.75 \times 43560 \times 0.00083 \\ \text{dWB} &= 1,057 \text{ CCF annual water allowance} \end{aligned}$$

The dWB will be itemized on a Landscape Water Use Statement Form provided by the City. See Appendix 2 for a sample form (*being developed*).

Note: For the purposes of these standards, the annual ET for Petaluma is 39 inches per year. It is expected that ET data will be used for irrigation management after plant installation, e.g. from CIMIS weather station #144 located at the Rooster Run Golf Course in Petaluma, or other site-specific, electronically monitored ET calculation system.

1.02 Calculate Landscape Water Requirements (LWR)

The landscape water requirements will be estimated based on a review of the landscape plans and the following formula. The LWR will be itemized on a Landscape Water Use statement form provided by the City.

$$\text{LWR} = \frac{\text{ET} \times (\text{landscape area for each hydrozone} \times \text{plant factor}) \times 0.00083}{\text{Irrigation Efficiency}}$$

Water Use Classification of Landscape Species (WUCOLS)

The water requirements of landscape plants are documented in the WUCOLS guide to the water needs of landscape plants. The City of Petaluma falls into WUCOLS region #1 described as north central and coastal. Plants are listed by botanical name and ranked in hydrozones as high, moderate or low (very low) water requirements. The following plant factors are used for each plant water requirement.

<u>Plant factor</u>	<u>Type of plants</u>
0.8 =	Turf (cool season) and high water-using plants
0.5 =	Moderate water-using plants
0.3 =	Low and very low water-using plants
0.8 =	Water features

1.03 Irrigation Efficiency

Irrigation efficiency is the portion of the irrigation water that is beneficially used to satisfy the water needs of the plants compared to the total irrigation applied. Included in the calculation are losses that occur due to controller programming errors, sprinkler overthrow, poor sprinkler distribution uniformity, and broken or leaking sprinkler systems. The irrigation efficiency is set at the industry standard of an acceptable level of 70%.

2.0 Requirements for Preparing a Landscape Plan

The Landscape Architect, or qualified designer responsible for design of the landscape areas, should seek to design a resource efficient landscape that includes, at minimum, observance of design water budget, soil analysis and water waste ordinance.

The Landscape Contractor, or qualified builder responsible for the construction and/or maintenance of the landscape areas, should seek to provide a high standard of construction. This should include an efficient water use to establish and maintain the landscape; observances of the City's water waste ordinance, the California Landscape Contractor's Association landscape standards and the Uniform Plumbing Code.

2.01 Statement of Design Intent

Each landscape plan submitted for review shall include a Statement of Design Intent. This statement shall show how sound water management will be incorporated and consist of:

1. A brief statement of the designer's use of an integrated management program (soil, water, irrigation system, fertilization and pest management) that optimizes plant health, resource efficiency and, therefore, cost-effectiveness for the site; and
2. A summary of the on-going water needs and long range maintenance of the project.

2.02 Site Map

A site map shall reflect the following:

1. Property lines and street names; and
2. Existing and proposed buildings, structures, retaining walls, fences, utilities, paved areas, and other site improvements including elevation, if applicable; and
3. Landscaped areas; and
4. Location of soil test(s) and soil percolation test(s) areas on base plan; and
5. Maximum slope ratios (both cut and fill) should be not more than three feet horizontal to one foot vertical unless erosion control measures are specified.

2.03 Planting Plan

The planting plan shall be drawn on project base sheets at a scale that accurately and clearly identifies:

1. Location of all proposed plant materials (trees, shrubs, ground cover, turf, and other vegetation) and a legend labeled by botanical name, common name, container size, spacing, and quantities of each group of plants indicated; and
2. Location, size and species of existing trees and plant materials to be removed or retained; and
3. All hydrozones measured per sq. ft. and clearly labeled; and
4. Locate pools, ponds, water features, fences and retaining walls; and
5. Locate existing natural features including, but not limited to rock outcroppings, water bodies; and
6. A calculation of the:
 - Total landscaped area in sq. ft.
 - Total turf grass area in sq. ft.; and
7. Prepare specifications for tree staking, soil preparation, and other applicable planting work and installation detail; and
8. Provide for a minimum of 3 inches of mulch to be added in non-turf areas to soil surface after planting except for very low groundcover type plants and around base of trees; and
9. Provide for a minimum of 1 inch of mulch to be added to areas planted with a non-turf ground cover (such as around base of trees and very low groundcover types plants); and
10. Visqueen, sheet plastic, and other non-porous material shall not be placed under the mulch. Porous weed-barrier fabrics are acceptable; and
11. Locate proposed site areas for soil amendments; and
12. Plant selection and grouping:
 - Any plants may be used in the landscape, provided the total metered water use does not exceed the design water budget (DWB) and that the plants meet the specifications set forth in the WUCOLS Guide. The design Water Budget will not allow for 100% use of high water plant materials or water features; and
 - Plants shall be selected based upon their adaptability to the climatic, geologic, and topographic conditions of the site. Protection and preservation of native species and natural areas is encouraged; and
 - Plants having similar water use shall be grouped together in distinct hydrozones; and
 - Trees should not be planted in turf, or, trees planted in turf should be surrounded by a mulched area of a diameter equal to the diameter of the projected median-life crown drip line; and
 - If new turf (and associated irrigation) is installed around established trees, trees should be surrounded by a mulched area of a diameter equal to the diameter of the projected median-life crown drip line;
 - The plant establishment period is considered to be 12 months for the purposes of these standards. Landscapes may require more irrigation than the DWB during the first 12 months after planting; and
13. Water Features:
 - Water needed to fill and maintain levels in water features shall be calculated in cubic feet per second (CCF) and included as part of the maximum landscape water allowance; and
 - Fountains or other types of decorative water bodies where water is sprayed into the air are discouraged. "Misting" will not be allowed; and
 - Any water feature submitted for review shall be designed to minimize evaporation; and

- Re-circulating water shall be used for any water feature; and
- Use of reclaimed water for fountains and water features is encouraged; and
- Refilling of all fountains and/or other type of decorative water bodies with potable water may be prohibited during a City-Council-declared water emergency.

3.0 Requirements for Preparing an Irrigation Plan

The Irrigation Designer, responsible for design of the irrigated landscape areas, should seek to design an efficient irrigation plan based on the design water budget approach for each City water meter service. All irrigation systems shall be designed to avoid: runoff, low head drainage, over-spray, or other similar conditions where water flows onto adjacent property, walks, roadways, or structures.

3.01 Statement of Design Intent

Each irrigation plan submitted shall include a Statement of Irrigation Design Intent. This statement shall describe the irrigation system and how the system conforms to the City's irrigation design requirements.

3.02 Irrigation Drawing, Schedules and Details

Drawings shall be the same scale as the landscape planting plan and shall accurately and clearly identify:

1. Location and size of the landscape water meter; and
2. Minimum static pressure at the point of connection. The nominal system static pressure for the City's water service area is available from the Department of Water Resources and Conservation at (707) 778-4392; and
3. Location, type, and size of all components of the irrigation system; point of connection, including electronic controllers, main lateral lines, valves, application devices, rain shut off sensors, flow sensors, soil moisture sensors, booster pumps, and back-flow prevention devices; and
- 4. Station/zone number, valve size, flow rate in gallons per minute (GPM), sprinkler precipitation rate, and operating pressure for each irrigation zone; and
5. Spot elevations used in making the grading plan; and
6. Two irrigation schedules for each irrigation controller. One schedule shall be based on Petaluma's historic ET for plant establishment period and the second schedule based on mature plant water needs.

3.03 Irrigation Specifications and Details

Specifications shall prescribe quality of materials, standards of workmanship, expected results, and guarantees, and include details as required.

3.04 Uniform Plumbing Code

Specifications for irrigation systems shall ensure that all requirements of the adopted unified plumbing code are met.

3.05 Water Service Requirements

A separate water meter shall be installed to irrigate each approved landscape. This meter shall be designated as an irrigation account.

3.06 Backflow Prevention

The irrigation system shall be separated from the City's water supply by a backflow prevention device or devices approved by the City Department of Water Resources and Conservation office. For a list of approved devices contact the Department of Water Resources and Conservation (707) 778-4436.

3.07 Soil-Water Relations

Soil types and infiltration rates shall be considered when designing irrigation systems. Irrigation equipment shall be used to closely match application rates to infiltration rates (Appendix - Soils Infiltration Rate Chart).

3.08 Irrigation Zones

Irrigation zones shall have the following characteristics:

1. All plants shall have similar water requirements (hydrozones); and
2. Irrigation zones shall encompass only one microclimate; and
3. All application devices shall have matched precipitation and even distribution uniformity.

3.09 Irrigation Equipment

Irrigation system components shall be selected on the basis that they are appropriate for the task. Criteria shall include water efficiency, performance, ease of maintenance, and public safety.

1. Sprinklers - All sprinklers for turf (microsprays, sprayheads, rotors, etc.) shall have spring retracted pop-up operation with flexible connections to piping. Sprinklers shall be selected and spaced for head-to-head coverage and maximum distribution uniformity. No overhead sprinkler irrigation systems shall be installed in areas less than eight (8) feet wide; and
2. Bubblers - All bubblers shall be pressure compensating. Bubblers exceeding 0.33 gallons per minute (gpm) shall be used only in planting basins with permanent basin walls to prevent runoff (i.e., tree wells in hardscape areas, planters, containers, etc.); and
3. Pressure Compensated Drip Systems - All drip systems shall be pressure compensating and designed to provide water uniformly to the area of a mature rootzone; and
4. Irrigation Controllers - Electronic controllers shall be required for all projects. They shall be capable of managing all aspects of the irrigation system design; and
5. Minimum controller requirements - Controllers shall have precise individual station timing; runtime capabilities for extremes in precipitation rates; at least one program for each hydrozone and microclimate; sufficient multiple cycles to avoid runoff; extended day calendar for deep-rooted plants; and, power failure backup for all programs; and
6. Anti-Drain Valves - The irrigation system shall be designed to prevent gravity drainage of water through application devices; and
7. Rain Sensing Devices - Irrigation systems shall be equipped with rain sensing devices to prevent irrigation during rainy weather. Soil moisture sensors shall not be used as rain sensing devices; and
8. Tree Irrigation - Trees in turf areas shall be placed in a separate hydrozone, segregated from all circuits and served by separate valves.

4.0 Requirements for Preparing a Grading Plan

Grading design plans satisfying the following conditions shall be submitted with the documents for landscape review:

1. A grading design plan shall be drawn on project base sheets on the same scale as the landscape planting plan. It should be separate from, but use the same format as, the landscape planting plan; and
2. The grading design plan shall indicate finished configurations and elevations of the landscaped area, including the height of graded slopes, drainage patterns, pad elevations, and finish grade; and
3. Where landscaped areas exceed 10 percent slope, contour lines and spot elevations as necessary for the proposed finished grade; and
4. Where applicable, provide specifications for stockpiling and reapplying site topsoil or imported topsoil; and
5. The grading design plan shall indicate soils test and soil percolation tests location(s).
6. The grading design plan agrees with soils report; and
7. Slopes, both cut and fill, should not be steeper than two to one. Slopes should not be constructed so irrigation water endangers or disturbs adjoining property; and
8. Temporary mulching, seeding, or other suitable erosion control stabilization measures should be used to protect exposed critical areas from surface runoff during construction. An erosion control plan is required for all grading performed between October 1 and the following April 15 (rainy season). Said plan shall be designed in accordance with the City of Petaluma Grading and Erosion Control Ordinance 1576; and
9. Where drainage swales are used to divert surface waters, they should be vegetated or otherwise protected from scour.

5.0 Requirements for Horticultural Soils Analysis Report

Soil chemistry analysis or horticultural suitability analysis:

1. For projects with a landscaped area greater than 44,000 square feet; and
2. Will be required from a laboratory specializing in landscape soils (see Appendix 4 for laboratories - forthcoming); and
3. Shall be made for approved projects after rough grading is completed; and
4. If soil is imported for use in the landscaped area, an analysis shall be submitted from each different source of origin of that fill material. Samples will be selected for analysis from each different soil type area of the project; and
5. Final inspections of the project will not be completed without receipt of the soils test report; and
6. Soil will be amended according to the soil test report recommendations.

V. REVIEW AND APPROVAL REQUIREMENTS

NOTE: The City of Petaluma shall decide the Review and Approval Procedure.

Prior to issuance of a building permit for a project, or as otherwise specified in the planning approval for the project, all the above documents shall be submitted for review and approval by the (see above Note).

VI. ALTERNATIVE EQUIPMENT OR DESIGN

The City will consider alternative methodologies for calculating plant water needs as long as the methodology has been endorsed and accepted by appropriate academic and professional organizations.